





**THE RAILWAY INTERRELATIONS OF THE  
UNITED STATES AND CANADA**

THE RELATIONS OF  
CANADA AND THE UNITED STATES

---

A SERIES OF STUDIES  
PREPARED UNDER THE DIRECTION OF THE  
CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE  
DIVISION OF ECONOMICS AND HISTORY

JAMES T. SHOTWELL, *Director*

THE  
RAILWAY INTERRELATIONS  
OF THE  
UNITED STATES AND CANADA

BY  
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## EDITOR'S PREFACE

THE subject of this volume is unique. The story which it tells has no parallel anywhere in history. The situation which it describes is unlike any other in the world today. The arrangements by which the great railway systems of the United States and Canada are linked to each other across the "unarmed frontier" give to this phrase a meaning which lifts it out of the rhetoric of sentiment into the area of practical life. There are unarmed frontiers between other countries, although none so far-reaching or so significant. But in no other case has the frontier been interlaced with lines of transit like this vast network of railways that crosses and recrosses the gateways between the two neighboring nations of northern North America; and in no other part of the world are the management and the use of international connections so devoid of politics, so free to serve the real interests of both nations. The narrative of this development is, therefore, something more than a chapter of the history of railroading or of the economic history of the two countries concerned. It is also the analysis of a great experience in international relations which has example as well as precept to offer to the rest of the world.

In view of the importance of the subject, it is remarkable that in all the literature on railroading and commerce there is no survey of the field covered by this volume. It is a pioneering enterprise, exploring data intended for other uses and by extensive correspondence reaching to first-hand sources never before tapped by the researcher. But the very difficulty of the task increases its significance. For it perhaps points to one of the chief reasons for the success of the Canadian-American traffic management. While it would be a travesty of business methods to apply to the railways the traditional explanation of the growth of the British Empire—that it was the product of absent-mindedness—still it is a fact that the arrangements for haulage over the Canadian-American frontier are obscure except to those immediately concerned, varying as they do with each situation that had to be met. Not all of these arrangements were systematically carried through and in some cases the statistical measurement seems to be something like an afterthought, if that.

But there are advantages in working this way, as the results show. Business could move freely without creating political barriers, because it went about its task quietly and limited the task to its own proper ends.

The consciousness of national rivalries which marked the building of transcontinental railway systems was not maintained in the day-to-day use of them, especially in the East, in anything like the way it prevails in Europe. The railway systems of the European Continent also have their intercommunications, from Moscow to Paris, from Berlin to Constantinople; but the rolling stock has no such freedom of entry on foreign soil as is the case in Canada and the United States. Here the cars of American railways move freely into the yards of Toronto and Montreal, and those of the Canadian lines elbow their way into the crowded terminals south of the border. Customs officers watch for the contents; but the carriers are truly international, and, as such, are agents and exponents of the community of interest that binds the two countries together.

This book, therefore, serves a larger purpose than the casual reader may at first divine. It shows the "unarmed frontier" not as a negative product of history, but as a positive fact, an expression of the interplay of two nations, each at work fashioning its own destiny and planning for its own prosperity. The interplay is a part of both destiny and prosperity, however, because the two countries share one continent. The way in which they share it is the theme of this whole series of Canadian-American studies, which have no further purpose than to open to critical intelligence the theater of a great and inspiring drama, that in which two democracies resolve their fates.

It is fitting that this volume should be written by one whose long and distinguished career as a railway executive and engineer qualifies him not only to describe the data of past and present but also to appraise the forces which are shaping the problems of the future. Colonel Wilgus brings to the task an intimate personal knowledge of the gateways on the border through which the greatest volume of traffic moves. His achievements in engineering, from early days of railroading in Minnesota to the creation of the Grand Central Terminal in New York, include in their reach the Windsor-Detroit tunnel, the Terminal Railway at Buffalo, and the bridging of the St. John River between Maine and New Brunswick. Founder of the

transportation service in France for the American Expeditionary Forces in the World War, he has left the record of that service in a definitive history, *Transporting the A.E.F. in Western Europe, 1917-1919*. In the present volume he turns from the problems of war to those of peace—problems equally vast, equally compelling, but more elusive because more commonplace. It is to be hoped that those who follow up the trails here opened will appreciate the labors of the pioneers as they profit from their achievements.

J. T. S.





## AUTHOR'S PREFACE

WHEN Dr. James T. Shotwell of the Carnegie Endowment for International Peace, some two years ago, honored me with a request to prepare a study of the railway interrelations of the United States and Canada, I little realized the magnitude of the undertaking. I soon found that, while there was a wealth of information at my command about railways on either side of the border, there was really very little that had a bearing on their interrelations. Even the maps in general use as a rule stopped short at the frontier. In consequence of this paucity of interrelated data it has been necessary for me to pore over many records of the past, and in the last analysis resort to the fountainheads of current information—railway executives and public officials—who have been most generous in their responses.

In planning the treatment of such a complex subject it has seemed well at the start to deal sketchily with the physiography of the two countries, including their terrain, the distribution of their populations and resources, and the extent to which they are served by cross-border railways, reaching, with their connections, to the farthestmost recesses of the continent. Then naturally would follow a historical outline of the evolution of transportation in the regions under consideration, from the days of the earliest explorers to the advent of the steam locomotive a century ago, and thereafter chronologically throughout the railway era to the present time. With the preliminaries thus dealt with, a more detailed description of the many border gateways could be given understandingly, succeeded by a broader consideration of the railway networks there woven into an inseparable whole. Structures of magnitude which physically serve this purpose then deserve a word, followed by a comparison of investments in road and equipment and financial results which have a vital influence upon the joint service of the interrelated railways in the public interest. A study of these basic features naturally leads to a consideration of the rate structure on which all else depends in the healthy functioning of these avenues of transportation. The tying together of the threads of this involved subject is left to the résumé, where it has seemed well briefly to point to the goal toward which our

railways appear to be heading and to venture a suggestion as to what may be done to guide them aright.

It should be explained that this study, commenced in 1935, is predicated in large part on the latest information that was then obtainable for this purpose from private and public sources, applicable to 1933 and 1934 and prior years, although in a few cases, owing to the length of time required to complete the work, it has been possible to include some of the figures for 1935 and 1936. The volumes of traffic, financial return, and related data herein shown are, therefore, to be taken as merely indicative of the comparative importance of the border gateways, and the character and intensity of the ebb and flow of intercourse by rail between the two countries. It is the lesson to be drawn from these comparisons that is of moment and not the figures themselves.

I owe my sincere thanks to Professor Shotwell and his colleagues of Columbia University, in particular Professor Samuel McKee, Jr., and his aide, Mr. Hugh Harvey, for the counsel and assistance which they have so freely given me in the preparation of this work; to those named in an accompanying appendix who have generously contributed to the correspondence that has to do with the railway interrelations of the two countries; to Professor J. Bartlet Brebner of Columbia University, Professors G. P. deT. Glazebrook, Harold A. Innis, and W. T. Jackman of the University of Toronto and Mr. Lesslie R. Thomson, Consulting Engineer, of Montreal, Canada, who without stint have most kindly given of their time and thought in reading and correcting the manuscript; to the Baker Library at Dartmouth College, Hanover, New Hampshire, where I was freely given access to a large portion of the books consulted in the making of this study; and to my devoted secretary, Mr. John J. Desmond, whose accuracy so mercifully has eased my path.

It is perhaps needless for me to add that for the opinions I have expressed, and for any errors that may have crept into the text despite earnest efforts to exclude them, I alone am to be held responsible.

W. J. W.

New York, N. Y.  
December, 1936.

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# THE RAILWAY INTERRELATIONS OF THE UNITED STATES AND CANADA

## CHAPTER I

### PHYSIOGRAPHY

RAILWAYS of their very nature follow lines of least resistance. In this they tread the valleys of stream and lake in their quest for access to the sea and for low spots in the divide between adjoining watersheds. Their objectives lie where the products of nature and the hand of man demand means of transport, where contacts may be made with other carriers on both land and water, and where the public foregather in search of amusement and recreation. Their development in many instances has been molded by the influences that have resulted from the struggle of rival ports for foreign trade and by political rather than economic considerations.

A general knowledge of the physical characteristics of the United States and Canada, therefore, is necessary to a full understanding of the spreading of their population and the origin, location, and expansion of their interrelated channels of trade, from the days of the early explorer to the present time. Only thus may a canvas be woven on which clearly to picture the system of rail transportation in which the people of the two countries have a common interest.

#### CONFIGURATION OF THE NORTH AMERICAN CONTINENT

A mere glance at the relief map of the North American continent, north of the Rio Grande and exclusive of Alaska and Greenland, will reveal its remarkable symmetry of outline and simplicity of internal structure. Its shape is approximately that of a trapezoid, widening slightly from south to north, and measuring on the average somewhat less than three thousand miles from coast to coast and a little over two thousand miles from the southern limit of the United States approximately at the thirtieth parallel of latitude to the habitable limit of say the sixtieth parallel in Canada. Embraced within the limits of the two countries is a land area of 6,440,569 square miles almost equally divided between them—to be exact,

2,973,776 square miles, or 46.2 per cent, in the United States and 3,466,793 square miles, or 53.8 per cent, in Canada.

Enclosing this vast space on the east and west are the two great uplifts, known as the Appalachian Mountains, situated from two to three hundred miles back from the Atlantic coast, with an intervening littoral on which the early white settlers of the continent first made their abode; and the Cordilleran series of mountain ranges and foothills, including the Rockies, extending back from the Pacific coast for distances varying from a maximum of say one thousand miles in the United States to four hundred miles in Canada.

Of the two uplifts the Appalachians are not only the narrower in width but also the lower in altitude, their maximum heights of some six thousand feet being less than a half of those of the Rockies with their series of peaks ranging from eleven thousand to fourteen thousand feet above the sea. Under different names, such as the Great Smoky, Cumberland, Blue Ridge, Allegheny, Catskill, Adirondack, and Green mountains, the Appalachian chain extends from Alabama in the United States to the Gaspé Peninsula in Quebec, Canada, broken, however, by two unique gaps where man from time immemorial has taken easy passage. Through one of these, between the Catskills and the Adirondacks, the Mohawk River takes its course from the interior of New York State to join the Hudson River on its way southerly to the sea at the port of New York. In the other, between the Adirondacks and the Green Mountains, are situated the low-level adjoining headwaters of a minor tributary of the Hudson River flowing to the south, and of Lake Champlain and its outlet the Richelieu River flowing northward to the St. Lawrence.

On the north there is still a third continental uplift, almost entirely within Canada, which has had a pronounced effect upon the development of the railways of the continent. It is the blunt-ended, V-shaped Canadian Shield, or Laurentian Highlands, a rugged, and in the main, non-agricultural wilderness<sup>1</sup> with sides converging toward the south, of which the western margin extends from the Hudson Bay country in a southeasterly direction along Lake Winnipeg, and its eastern margin southwesterly through the Labrador

1. The clay belts of northern Ontario are devoted to farming on a considerable scale, with lumbering as an additional employment. The entire region is rich in mineral prospects.





*Relief Map of the United States and Canada*

### KEY TO NUMBERS

- |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| 1. Lake of the Woods  | 14. Erie Canal        | 27. Lake St. Clair    |
| 2. Rainy River        | 15. Hudson River      | 28. St. Clair River   |
| 3. Pigeon River       | 16. Delaware River    | 29. Miami River       |
| 4. Georgian Bay       | 17. Susquehanna River | 30. Maumee River      |
| 5. Trent River        | 18. Potomac River     | 31. Kalamazoo River   |
| 6. St. John River     | 19. Genesee River     | 32. Green Bay         |
| 7. St. Croix River    | 20. Allegheny River   | 33. Fox River         |
| 8. Kennebec River     | 21. Monongahela River | 34. St. Marys River   |
| 9. Chaudière River    | 22. Cuyahoga River    | 35. Wisconsin River   |
| 10. Richelieu River   | 23. Muskingum River   | 36. Wabash River      |
| 11. Lake Champlain    | 24. Sandusky River    | 37. Passamaquoddy Bay |
| 12. Connecticut River | 25. Scioto River      | 38. Bay of Fundy      |
| 13. Mohawk River      | 26. Detroit River     |                       |

Peninsula to a terminus a thousand miles in length along the northern, western, and southern shores of Lake Superior and the northern shore of Lake Huron. Its intrusion from the north constitutes a formidable barrier to land communication in Canada between its eastern and western sections.

Buttressed against the Canadian Shield on the east and the Rocky Mountains on the west is a moderate rise of ground, near the forty-ninth parallel, which throws the waters of the central interior of the continent northward to Hudson Bay and the Arctic Ocean, and southward in the valley of the Mississippi to the Gulf of Mexico. Connecting with it just west of Lake Superior is the imperceptible rise which continues to the Appalachians and serves as a divide between the waters of the St. Lawrence—Great Lakes system on the north and those of the Mississippi on the south.

Thus the interior of the continent is divided into three great basins—that of the Mississippi River and its tributaries, embracing some 1,250,000 square miles, discharging its waters southerly into the Gulf of Mexico; that of the Great Lakes—St. Lawrence River, containing upward of 525,000 square miles and flowing eastward into the upper Atlantic Ocean; and that of Hudson Bay and the Arctic Ocean, embracing more than 2,800,000 square miles, with its outlets to the north. At one spot in northern Minnesota, midway between the oceans, the waters of all three basins have a common origin in a locality which has been fittingly termed “the crossroads of the continent.”<sup>2</sup>

#### THE INTERNATIONAL BOUNDARY

The boundary<sup>3</sup> between the two nations, hereinafter referred to as the “border,” places practically all of the basin of the Mississippi within the United States and nearly all of the Hudson Bay—Arctic Ocean basin within Canada, while the Great Lakes—St. Lawrence basin is shared between them. Following the forty-ninth parallel

2. J. B. Brebner, *The Explorers of North America*, p. 374.

3. This description rests upon correspondence with the International Boundary Commission, which will be found in the Author's collection of Correspondence respecting Railway Interrelations of the United States and Canada, 1935–36. The disposition of these letters is explained in the note on p. 244, *infra*.

along or in the vicinity of the east-and-west continental divide, from the Strait of Georgia 150 miles inward from the mouth of the Juan de Fuca Strait on the Pacific coast to the angle at the jog leading due north for 27 miles to the northeasternmost corner of the Lake of the Woods, the boundary is as straight as a die for a distance of 1,270 miles. Its surroundings present no unusual aspects that seriously affect the interrelations of the railways of the two countries. But from there eastward the physical situation along the border has had a profound effect on the political and commercial development of the two countries, and, therefore, on the interrelations of their means of communication. Bearing slightly southeast for 426 miles through the Lake of the Woods, the Rainy River system, and the Pigeon River the boundary emerges into the chain of Great Lakes and connecting waters which it follows for 1,289 miles, first through Lakes Superior and Huron in a curving direction sharply to the southeast and south to about latitude  $42^{\circ}$  at the extreme western end of Lake Erie and then in a northeastern direction through that lake and Lake Ontario to latitude  $45^{\circ}$  in the St. Lawrence River. Thus the territory of the Dominion of Canada, so tightly squeezed between the Laurentian Highlands and Lakes Superior and Huron, widens to the south for some five hundred miles, in such manner as to interpose a political barrier between the parts of the United States which lie on either side of it. Along the forty-fifth parallel the boundary extends eastward for 155 miles to a tributary of the Connecticut River and thence for 670 miles on a devious course first to the north in the neighborhood of latitude  $47\frac{1}{2}^{\circ}$  and then southerly, in part along the St. John and St. Croix rivers, to the Atlantic Ocean at Passamaquoddy Bay. As Canadian territory is thus interjected into the vitals of the United States in the vicinity of Lake Erie, so is the reverse true where this projection of the boundary some four hundred miles to the north operates as a political barrier between the provinces of Canada on either side of it.

From this brief description of the international boundary—3,987 miles in length, of which 1,789 are on land and 2,198 on water—it will be seen that its eastern half, in both irregularity of course and nature of terrain, imposes the need for close coöperation and comity on the part of the people of the two nations. For nearly 1,300 miles it traverses the waters of a series of great inland seas with their con-



necting rivers and their magnificent outlet to the ocean used by them in common, and, in its dip to the south and its rebound to the north, the use of the territory of each is essential to the other for direct railway communication between the east and west. Along its entire length of nearly four thousand miles, the fifteen American states of Maine, New Hampshire, Vermont, New York, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin, Michigan, Minnesota, North Dakota, Montana, Idaho, and Washington are in close contact with the seven Canadian provinces of New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia; and in addition eleven others in the United States come within the zone of direct border influence—Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, Iowa, South Dakota, Nebraska, Wyoming, and Oregon—and in Canada the province of Nova Scotia.

#### PRODUCTS OF SOIL, SUBSOIL, AND INDUSTRY

The climate of the two lands deserves a word of comment, affecting as it does the products of the soil on which the railways so largely depend for their living. In the United States there is a range in temperature so conducive to the raising of such a wide variety as cotton and semitropical fruits and early vegetables in the South, corn and wheat and other grains in the Mississippi and Columbia river valleys, and hardy fruits in the Northwest. In Canada the protection afforded by the lofty Rockies west of the Laurentian Highlands enables wheat and other grains of the finest quality to be raised in great profusion in the provinces of Alberta, Saskatchewan, and Manitoba within the limits of a three-hundred-mile belt as now developed for a distance of eight hundred miles east and west along the border and four hundred miles along a parallel course on the north. In fact the northern limit of growth of cereals follows very closely the July isotherm of  $60^{\circ}$  F. from near the mouth of the St. Lawrence River in latitude  $51^{\circ}$  to the southern and western shores of Hudson Bay, Great Slave Lake, and latitude  $65^{\circ}$  on the Alaskan boundary, a distance as far north as 1,100 miles above the border between the two countries. East of the Laurentian Highlands the fertile lower peninsula of Ontario is productive of vegetables, fruits, tobacco, and dairy products; and the upper portions of that province, as well as enormous areas in Quebec and New Brunswick, yield



forest products on a gargantuan scale. Mention, too, should be made of wines which are an important product of Pt. Pelee. Furs, for time immemorial, have come forth from Canada in response to the call for them from the people below the border as well as from overseas.

A word, too, should be said of subsoil products on the two sides of the line. The United States is rich in coal in the Appalachian states of Pennsylvania, Ohio, West Virginia, and Kentucky, in the Mississippi Valley states of Illinois, Iowa, and Missouri, and in the northwestern states of North Dakota, Montana, Wyoming, and Washington, while in Canada the coal resources are confined in large part to the Maritime Provinces in the extreme east, and to Alberta, Saskatchewan, and British Columbia in the Far West. In iron ore, famed for richness of yield and low cost of extraction, the United States possesses enormous deposits in various places in Michigan, Wisconsin, and Minnesota within easy reach of the Great Lakes, but in Canada nature has been less generous in this respect. Its only available supply in quantity of high quality ore under the British flag is from the neighboring island of Newfoundland, in view of the inferiority of its own huge deposits in the Laurentian Highlands. Copper deposits in the United States are on an enormous scale in Michigan, Wisconsin, and Montana; in Canada they exist in a slightly lesser degree. Other minerals on the United States side of the border are found in great profusion in Montana, Idaho, Wyoming, and Washington, and on the Canadian side in British Columbia and in the other provinces, too, where, among a wide range of ores, cobalt, nickel, zinc, silver, gold, gypsum, and asbestos are produced in abundance. Oil deposits in the United States, in the Southwest and in California, are looked to by Canada, whose remaining fields are placed in Alberta and the valley of the Mackenzie as well as in southwestern Ontario.

As is to be expected, great manufacturing centers have sprung up within the limits affected by the border influence where natural products are close at hand and cheap transportation is available by water and rail for raw materials and the finished article. On the American side there are the outstanding interior cities of Chicago, Detroit, Cleveland, Pittsburgh, Milwaukee, Buffalo, and the twin cities of St. Paul and Minneapolis, and the seaports of New York, Philadelphia, Baltimore, Boston, Seattle, Washington, and Port-

land, Oregon, as well as a host of lesser centers. These by reason of their production of iron and steel, automobiles, flour, meats, and an endless list of other manufactures, and their contact with water carriers to and from domestic and foreign ports, are the goals of Canadian railways and their connections seeking traffic in both directions in the interest of their nationals. On the Canadian side are a great many manufacturing centers, including the leading ones at Windsor and vicinity, Toronto and Hamilton, along and near the northern shores of Lakes Erie and Ontario and the St. Lawrence River and its tributaries in Ontario, and to a large extent in the province of Quebec, where, with other manufactures, there is an immense production of wood pulp and newsprint. These, as well as interior centers in the West such as the Algoma steel plant at the "Soo" and the flour mills at Kenora and Winnipeg, together with the seaports at Montreal, Quebec, Halifax, St. John, and Vancouver, are the goals of American railways and their connections. Then there are, of course, the more distant steel and coal plants of magnitude at Sydney, Nova Scotia, where the basic factors of coal, high-grade ore (Webana, Newfoundland), limestone, and deep-water transportation are in conjunction.

#### PIONEER ROUTES BETWEEN THE INTERIOR OF THE CONTINENT AND THE SEA

The rivers and lakes which drain the three interior basins of the continent have had not only a controlling influence on railway location but they have also played a great part in the priority of settlement which dictated the courses followed by the earlier channels of trade and, in consequence, the ones which came later, culminating in the railway. From the Atlantic seaboard the easy rise of the Potomac and Susquehanna rivers and their tributaries led the pioneer to passes in the Alleghenies, and thence to the valley of the Ohio on which his products descended along the course of least resistance to the sea at New Orleans. The Susquehanna, too, along with the Delaware, offered an outlet to the sea at Philadelphia and Baltimore for the products of those who settled on their borders as far north as the State of New York. The Hudson River, with its main tributary, the Mohawk, drew a population which looked to the port of New York as a means of contact with the outer world. When the railway

came, therefore, it found flourishing populations already established on which to draw for traffic. The Baltimore & Ohio and Pennsylvania railroads thus were attracted over the mountains to thriving communities at and below the confluence of the Allegheny and Monongahela rivers at Pittsburgh, and ultimately to the great focal points of the traffic of the Middle West at Chicago, Cincinnati, and St. Louis. The Erie Railroad had its goal in the populations which had settled along the tributaries of the Delaware, Susquehanna, and Ohio rivers in southern New York and on the shores of Lake Erie, and farther west in the regions also served by the Baltimore & Ohio and Pennsylvania railroads. The New York Central, through the gap made by the Mohawk in the Appalachian range, had access by low gradients to regions in western New York and along the Great Lakes which had been settled much later than those on the Ohio, and beyond them to the points also reached by its rivals in the Middle West. These four rivers emptying into the Atlantic—the Potomac, Susquehanna, Delaware, and Hudson—in conjunction with the Ohio, and the minor valleys leading therefrom toward the Great Lakes had, therefore, a compelling effect on the early development of the railways of the United States in their relation to the railways of Canada.

In the St. Lawrence—Great Lakes Waterway we have nature's fifth route between the interior of the continent and the sea, which in particular has been a predominant factor in the traffic relations of Canada and the United States from earliest times, and especially so since the defeat of its rivals, the Ohio and the Mississippi, after the railway had arrived upon the scene.

For nearly 2,350 miles it penetrates the continent from the Strait of Belle Isle to Duluth, a veritable Mediterranean Sea, with its 30-foot channel for ocean-going vessels for more than a thousand miles as far as the harbor of Montreal just below the mouth of the Ottawa River, and thence for lake vessels drawing as much as 20 feet to the head of the lakes, except in the 116-mile section between Montreal and Ogdensburg where vessel drafts are limited by the depth of 14 feet in the canals around the rapids in that section. From Montreal to still water at the level of Lake Ontario at Ogdensburg the ascent is 226 feet; from Lake Ontario to Lake Erie around the falls of Niagara, surmounted by locks with an existing channel depth of 25



feet in the Welland Ship Canal, the ascent is slightly more than 326 feet; from Lake Erie to Lake Huron through the Detroit River, Lake St. Clair, and St. Clair River, the ascent is nearly 9 feet; and from Lake Huron, having the same elevation as Lake Michigan, the ascent of 21 feet is surmounted by locks and canals at Sault Ste Marie having a downstream minimum depth of 24 feet on the American side. In both the United States and Canada public opinion is vigorously arrayed for and against the proposal that the 116 miles in the St. Lawrence River, together with the Welland Ship Canal and the Detroit-St. Clair section, should be deepened and the locks at the "Soo" reconstructed, to provide a minimum channel depth of 27 feet, which later could be increased by dredging to 30 feet, from Montreal to the head of Lake Superior.<sup>4</sup> As in the past this magnificent waterway, with its controlling effect on the whole freight rate structure between Chicago and the Atlantic seaboard, has had a potent influence on the interrelations of the two great railway systems of Canada with the eastern trunk lines and other railways of the United States within the region of the Great Lakes, so in the future may this be expected in an increasing degree should these momentous changes be brought about.

#### ST. LAWRENCE—GREAT LAKES—ATLANTIC OCEAN WATERSHEDS

Reference may now be made to the rivers and lakes which offer an easy means of communication between the St. Lawrence-Great Lakes basin and the Atlantic seaboard, and between the ports on opposite sides of the series of fresh-water inland seas which divide the two countries.

Taking first the rivers of which the upper valleys serve to unite the courses of waters flowing to the Atlantic Ocean with those descending to the St. Lawrence-Great Lakes basin, there is the St. John which heads up with one of its tributaries close to the St. Lawrence River at Rivière du Loup and empties into the Bay of Fundy in the Province of New Brunswick. In or along its fertile valley, and that of the St. Croix River, lies the Canadian Pacific Railway connecting with the Maine Central Railroad at Vanceboro and at Calais, both in eastern Maine, and in addition serving the rich potato district of eastern Maine by means of branches to Houlton, New

4. Senate Document No. 183, 69th Congress, 2d Session, 1927.

Sweden, and Presque Isle. In eastern Maine there is also the Maine Central Railroad branch from St. Croix Junction to Princeton, which crosses and recrosses the border without doing business in Canada. In northern Maine, where the St. John River is along the border, the short Van Buren Bridge extension of the Bangor & Aroostook Railroad connects with the transcontinental line of the Canadian National Railways adjoining St. Leonard, N. B. On the western side of Maine the Kennebec River Valley has its headwaters adjacent to those of the Chaudière River in Quebec where the transcontinental line of the Canadian Pacific crosses the divide near Megantic, Quebec, on its way through Maine to the New Brunswick port of St. John, open twelve months of the year. There are, therefore, six points of railway interchange at the border in Maine—five in the valleys of the St. Croix and St. John rivers and one at the headwaters of the Kennebec and Chaudière rivers, as well as two non-interchange crossings in the watershed of the St. Croix.

Farther to the west the watershed of the Connecticut River adjoins that of the north-flowing St. Francis River, and across this divide the line of the Canadian National Railways passes through Norton Mills, Vermont, on its way from Montreal and Quebec to Portland, Maine; also the Canadian Pacific Railway on its way from Quebec through North Derby and Newport, Vermont, en route for Boston over the Boston & Maine Railroad.

In the historic valley of Lake Champlain, fed by descending waters from the low level "Grand Pass" to the Hudson River Valley and draining northward through the Richelieu River to the St. Lawrence some fifty miles below Montreal, lie several important lines of communication between the two countries—the Canadian Pacific Railway from Montreal via Richford, Vermont, to a junction with the aforesaid Quebec-Boston line of the company at Newport, Vermont, crossing the border three times in its course along the Missisquoi River tributary of Lake Champlain, together with a fourth crossing where the branch from Windsor Mills, Quebec, joins the aforesaid line at North Troy, Vermont; the Central Vermont Railway, controlled by the Canadian National Railways, en route from Montreal, Quebec, via the Winooski, White, Connecticut, and other river valleys to New London, Connecticut, and other New England points as well as the port of New York, passing through the border point of

Highgate Springs, Vermont; the old Canada Atlantic,<sup>5</sup> now a part of the Canadian National Railways, crossing the border near East Alburgh, Vermont, and joining the Central Vermont near St. Albans, Vermont; the Canadian National Railways from Montreal via St. Johns to Rouses Point, New York, where connection is made with the Rutland Railroad leading to New York and Boston; and the Delaware & Hudson Railroad from New York points and the anthracite regions of Pennsylvania, connecting at Rouses Point with its Napierville Junction Railway in Canada for access to Montreal. Eight railway connections are thus made across the border in the valley of Lake Champlain.

In northern New York, in addition to the aforesaid crossings of the Delaware & Hudson and Canadian National railways at Rouses Point, there are four intersections of the border by lines which, however, do not follow noteworthy river valleys: those of the New York Central Railroad from New York through the Adirondacks to Montreal and Ottawa which cross the boundary near Huntingdon, Quebec, and Cornwall, Ontario, respectively; the Canadian National near Fort Covington, New York, on its way from Montreal to a connection with the New York Central at Massena, New York; and the New York Central, by means of a car ferry across the St. Lawrence River, from Ogdensburg, New York, to a connection with the Canadian Pacific at Prescott, Ontario.

In the Lake Ontario portion of the boundary there are a number of ports on either side, but there is now but one established line of railway connection—the car ferry which joins the Baltimore & Ohio Railroad terminus at Genesee Dock near the mouth of the Genesee River at Charlotte, New York, with the Canadian National Railways at Cobourg, Ontario. The Genesee River, by the way, has its source where waters in the other direction pitch into the Allegheny River, leading via Pittsburgh and the Ohio and Mississippi rivers to the Gulf of Mexico. Mention also should be made of the Oswego River of which the watershed in New York State skirts those of the Mohawk River leading to the Hudson River on the east and the Susquehanna River draining southward in the direction of Philadelphia and Baltimore. The city of the same name at its mouth,

5. A link in the “differential” rail-and-water route between the New England states and Chicago and Milwaukee via Depot Harbor, Ontario.



served by the New York Central, Delaware, Lackawanna & Western, and New York, Ontario & Western railroads, now has no established means of direct railway interrelations with Canada; but its past and potential future importance give promise that this may come about. In addition to Cobourg on the Canadian side of the lake mention should be made of such outstanding ports as Toronto, Hamilton, and Kingston, at which opportunities are afforded for water carrier connections between the railways of both countries. Thus railways serving these two principal ports on the American side and four in Canada are joined by water with each other, or with more distant points on the Great Lakes, for such interchanges of traffic as is offered from time to time by independent steamship lines.

The most important traffic gateways between the two countries on the Great Lakes frontier are on the Niagara River, between Lake Erie and Lake Ontario, where three bridge crossings of the boundary, one at Black Rock, Buffalo, and two at Niagara Falls, make it possible for three American lines traversing Ontario from the west—the New York Central's Canada Southern Railway, the Pere Marquette, and the Wabash—thus to repatriate themselves; and for three Canadian roads—the Canadian Pacific, Canadian National, and Toronto, Hamilton & Buffalo railways—to gain entrance to the United States. Meeting these six rail carriers from Canada are an equal number leading eastward on the American side of the boundary, namely, the low-gradient New York Central which parallels the Erie Canal and the Mohawk River to the Hudson River at Albany and thence proceeds across the Connecticut River watershed to Boston and down the Hudson to New York; and the Lehigh Valley; Delaware, Lackawanna & Western; Erie; Baltimore & Ohio; and Pennsylvania railroads which follow a variety of watersheds on their cross-country way to Boston, New York, Philadelphia, and Baltimore and other points on the Atlantic seaboard. At this important meeting point lies the city of Buffalo—a milling and steel center of magnitude, and a leading point of transfer of grain between carriers by rail and water.

#### ST. LAWRENCE—GREAT LAKES—OHIO RIVER WATERSHEDS

On the shores of the separating waters of Lake Erie there are a considerable number of ports in both countries which in several in-

stances had car-ferry connections between them in former days. Indirectly they have to do with the existing railway interrelations of the two countries through the intermediary of water carriers. Those in the United States lie at the mouths of north-flowing streams which in conjunction with rivers flowing southward played an outstanding part in the early struggle of the channels of trade in the St. Lawrence—Great Lakes basin for a share of the traffic which passed down the Ohio and Mississippi rivers to New Orleans. In addition to Buffalo, New York, of which mention has been made, there are Dunkirk, New York, which was the original terminus of the Erie Railroad; Erie, Pennsylvania, located near the head of a tributary of the Allegheny River leading southward to the Ohio River at Pittsburgh and served by the Pennsylvania Railroad's line to Philadelphia; Conneaut, Ohio, at which coal brought there by the Chesapeake & Ohio system is transshipped for Port Stanley and Rondeau in Ontario; Ashtabula, Ohio, a railway outlet for Pittsburgh and other interior manufacturing and mining regions; Fairport, Ohio, the lake terminus of the Baltimore & Ohio Railroad; Cleveland, Ohio, an important railway center at the mouth of the Cuyahoga River, of which the headwaters adjoin those of the Muskingum River flowing into the Ohio at Marietta; Sandusky, Ohio, from which the valley of the river of the same name rises to the headwaters of the Scioto River, descending to the Ohio River at Portsmouth; and Toledo, Ohio, at the mouth of the Maumee River heading up at the sources of the Miami and Little Miami rivers which join the Ohio near Cincinnati and at the source of the Wabash River which flows southwest to the Ohio above its confluence with the Mississippi at Cairo. These nine leading Lake Erie ports in the United States are matched in Ontario by Port Colborne, Port Dover, Port Rowan, and Port Burwell, in addition to Port Maitland, Port Stanley, and Rondeau, seven in all, at which connections are made with independent water carriers serving in some degree as links between the railways of the two countries. Between two of them, Ashtabula, Ohio, and Port Burwell, Ontario, the Pennsylvania and Canadian Pacific roads in their interest now operate a car-ferry connection.

At the Detroit—St. Clair frontier the separating waters are crossed by an important volume of rail traffic, similar to that at the Niagara frontier. Between Detroit, Michigan, and Windsor, Ontario, Ameri-



can rail carriers convey their traffic across the Detroit River boundary between western and eastern points—the New York Central by tunnel and the Pere Marquette and Wabash railways by car ferry; while the Canadian National and Canadian Pacific railways between corresponding points cross by means of car-ferry connections supplemented by trackage rights through the tunnel in the case of the Canadian Pacific's passenger service. Between Sarnia, Ontario, and Port Huron, Michigan, the Canadian National handles its international traffic through the tunnel beneath the St. Clair River.

#### GEORGIAN BAY—OTTAWA RIVER WATERSHEDS

On the shores of Lake Huron and Georgian Bay there is a succession of ports in the province of Ontario, principally for the transshipment of grain from other lake ports, at which the rail carriers of Canada are placed in touch by water with the railroads of the United States. They include Goderich, Owen Sound, Collingwood, Midland, Port McNicoll and Depot Harbor (Parry Sound), from which traffic moves over the Canadian National and Canadian Pacific to Montreal and other eastern points in Canada, and to points in the United States via the Lake Champlain, Vermont, and Maine gateways. In their course eastward from these ports the carriers in part traverse the valleys of the Ottawa and Trent rivers, which from earliest colonial days were used as trade routes by water between the St. Lawrence River and the upper Great Lakes, as a means of escaping the stormy passage and Indian dangers incident to the use of Lakes Ontario and Erie. Between Depot Harbor and Chicago and Milwaukee, the Canadian National operates a line of steamers as a link in its important differential route to New England.

#### ST. LAWRENCE—GREAT LAKES—MISSISSIPPI RIVER WATERSHEDS

While Lake Michigan is entirely within the limits of the United States its waters are freely at the disposition of Canada for the purposes of navigation, as are those of the lower St. Lawrence in Canada at the disposition of Americans. Chicago at its lower extremity is the great objective of the leading railways of both countries, and on the western shore of Lake Michigan lies Milwaukee reached by the Canadian National Railways by car ferry from its lines in Michigan. The

lip of the St. Lawrence—Great Lakes basin at Chicago is so low that the hand of man has sufficed to abstract and pour its waters into the Des Plaines River and thence down the Illinois and Mississippi rivers to the Gulf, an act viewed by important interests in the United States and Canada as highly unethical and promotive of discord between those countries. The terrain of the Mississippi basin, touching that of the St. Lawrence—Great Lakes at Chicago, is admirably suited to the creation of railroads leading south, west, and north, into regions tapped directly and indirectly by the carriers of both countries, including that of the Canadian Pacific which, by means of subsidiaries, extends to St. Paul and Minneapolis, Minnesota, and thence to its transcontinental line in Saskatchewan, Canada. Farther north the low divide between the headwaters of the Fox River emptying into Green Bay and the Wisconsin River flowing into the Mississippi was in the pathway of the early explorers of the continent.

Joining the waters of Lake Huron and Lake Superior is the St. Marys River at Sault Ste Marie, where lines in the United States under the control of the Canadian Pacific are united with the rails of that system on its native soil. At the Canadian ports of Port Arthur and Fort William on the north shore of Lake Superior, and at the American ports of Duluth, Minnesota, and Superior, Wisconsin, at the extremity of the lake, are the great points of transshipment of grain and copper and iron ores from rail to water carriers reaching ports in both countries, where some of the cargoes are retransferred to rail, as well as coal from ship to car in the reverse direction.

#### HUDSON BAY—MISSISSIPPI RIVER WATERSHEDS

This outline of the topography of the continent as affecting the railway interrelations of Canada and the United States so far has dealt with the natural features which have promoted interchanges between the St. Lawrence—Great Lakes basin, the Atlantic seaboard, and the valleys of the Ohio and Mississippi. In the Rainy River system the waters ultimately reaching Hudson Bay afford an easy pathway for the Canadian National lines between Winnipeg and ports in both countries on Lake Superior, the crossings of the boundary in that distance numbering three. Then in the valley of the Red River of the North, likewise discharging its waters into Hudson Bay, and heading up at the source of a tributary of the Mississippi

in the State of Minnesota, there are a number of important railway routes. The Midland Railway of Manitoba connects on the border near Emerson, Manitoba, with two American carriers, by which it is jointly used, the Great Northern and the Northern Pacific railways, and the Canadian Pacific there connects with the Minneapolis, St. Paul & Sault Ste. Marie Railway which it controls. The three of these roads in the United States handle traffic en route from Winnipeg, Manitoba, to St. Paul, and Minneapolis, Minnesota, and thence to Chicago and points east in one direction, and in the case of the Canadian line also through Wisconsin by two lines to the "Soo" and thence through Canada to points in the East in both countries. In the same valley the Canadian Pacific joins the Great Northern Railway at the border near Gretna, Manitoba (Neché, North Dakota), a few miles west of Emerson, and the Great Northern crosses the border near Haskett, Manitoba, on its way to Morden on the Canadian Pacific and near Bannerman, Manitoba (St. John, North Dakota), on its way to a junction with both Canadian railway systems at Brandon, Manitoba.

From Bannerman west the first point of crossing is at Northgate, North Dakota, where the Great Northern connects with the Canadian National in the valley of the Souris River, the waters of which flow into Hudson Bay; and next, in the same valley, at North Portal, Saskatchewan (Portal, North Dakota), where the Canadian Pacific joins its controlled line, the Minneapolis, St. Paul & Sault Ste. Marie Railway.

The next connection between the railways of the two countries is made in the valley of the Missouri River, a tributary of the Mississippi, where the Canadian Pacific meets the Great Northern near Coutts, Alberta (Sweetgrass, Montana).

#### PACIFIC COAST WATERSHED

Then comes the extension of the Great Northern across the border at Newgate, British Columbia, on its way from Rexford, Montana, to Fernie, British Columbia, up the Kootenay River which is a tributary of the Columbia River discharging into the Pacific Ocean. In the same valley the Spokane International Railway joins with the Canadian Pacific over which that company has access to Spokane, Washington, via Curzon Junction and Kingsgate, British Columbia.



Likewise in the valley of the Columbia, the Great Northern has one extension over the border from Marcus, Washington, to Nelson, British Columbia, and another which crosses and recrosses the border five times<sup>6</sup> en route from Marcus to Republic and Molson, Washington, via Grand Forks and Midway, British Columbia, and from Wenatchee, Washington, to Princeton, British Columbia. Finally, on the Pacific slope, there is a crossing of the border between Huntingdon, British Columbia, and Sumas, Washington, where the Canadian Pacific and Northern Pacific are joined on the route between Seattle, Washington, and Vancouver, British Columbia, and another crossing at Blaine, Washington, on the Great Northern's route between the same termini.

#### CROSS-BORDER RAILWAY CONNECTIONS AND OWNERSHIPS

In the description of the lines of least resistance followed by the cross-border interrelated railways of the two countries, attention has been directed to eight railway intersections of the border between the State of Maine and the Provinces of New Brunswick and Quebec; eight between the State of Vermont and the Province of Quebec; eleven between the States of New York and Ohio and the Provinces of Quebec and Ontario, including the car-ferry links across the St. Lawrence River and Lakes Ontario and Erie; seven between the State of Michigan and the Province of Ontario including those at the Detroit-St. Clair Frontier and the "Soo"; four between the State of Minnesota and the Provinces of Ontario and Manitoba; six between the State of North Dakota and the Provinces of Manitoba and Saskatchewan; two between the State of Montana and the Province of British Columbia; one between the State of Idaho and the Province of British Columbia; and eight between the State of Washington and the Province of British Columbia.

In the aggregate fifty-five<sup>7</sup> railway and car-ferry crossings of

6. Reduced to three crossings when the operation of the branch from Curlew to Molson, via Midway, British Columbia, was discontinued February 28, 1935.

7. In addition there is the regular steamship connection of the Canadian National Railways between their terminus at Depot Harbor, Ontario, and American railways at Milwaukee, Wisconsin, and Chicago, Illinois, thus making the total number of border crossings 56 in the year 1933, reduced to 54

the four-thousand-mile international boundary, apart from the many steamship links, thus bind together the people of the two countries in a community of interest, a task made comparatively simple by the favorable nature of the terrain of the neighboring regions. By their means access to American feeder traffic is made possible for the three Canadian east-and-west transcontinental lines which, with the exception of comparatively short passages of the Canadian Pacific across Maine and the Canadian National across Minnesota, bridge the continent on Dominion soil from sea to sea—one belonging to the Canadian Pacific and the other two to the Canadian National Railways. Likewise among their number are the openings by means of which those systems are enabled to occupy the soil of the United States, in conjunction with American carriers, so as to give to Canada three additional lines of communication between the East and West—one via the Canadian Pacific at the "Soo" and two, respectively, via the Canadian Pacific and Canadian National at Detroit and Chicago. Furthermore, entrances through certain of these openings are afforded them to the American ports of New York, Boston, and Portland, Maine. In all, therefore, the border crossings are vital features of the Canadian railway situation, as gateways for both their north-and-south feeders in the United States and for essential links on American territory in five of their six east-and-west ocean-to-ocean routes which, in a national sense, mean so much to the Dominion. As to the American carriers this is likewise true, although, unlike the Canadian lines, they do not extend in each instance under a single management from coast to coast. Of the three so-called transcontinental lines in the United States which adjoin the border west of the head of the Great Lakes, two only, the Great Northern and the Northern Pacific, possess direct contacts at these crossings with Canadian feeders. East of Chicago three systems, the New York Central, Pere Marquette, and Wabash, depend on them as gateways for extremely important east-and-west traffic crossing the Province of Ontario between points in the United States; the other crossings

when the branch from Curlew to Molson, Washington, was discontinued in February, 1935. Of these crossings two are located at Rouses Point, two at Niagara Falls (Suspension Bridge), and five at Windsor-Detroit. The number of individual border gateways, therefore, was 50 in the year 1933, now reduced to 48.

TABLE 1

*Operated Railway Mileages beyond the Border*

<i>Canadian Operated Mileage in the United States*</i>		<i>United States Operated Mileage in Canada*</i>	
	<i>Miles</i>		<i>Miles</i>
Canadian National Railways:		Maine Central R.R.—Princeton	
Lines in Maine .....	172	Branch .....	5.1
Central Vermont .....	432	Bangor & Aroostook R.R.—Van	
Connection with C.V. Ry. in		Buren Bridge Co. ....	0.3
Vermont .....	3	Delaware & Hudson R.R.—Na-	
Connections and branches in New		pierville Junction Ry. ....	41.7
York .....	24	New York Central Lines:	
St. Clair Tunnel Co. }	1,008	St. Lawrence & Adiron-	
Grand Trunk Western Ry. }		dack Ry. ....	60.7
Branches and connections in		Ottawa & New York	
Michigan and Wisconsin .....	177	Ry. ....	58.8
Transcontinental Line in Minne-		Detroit River Tunnel	
sota .....	44	Co. ....	1.5
	<u>1,860</u>	Canada Southern Ry. ..	<u>381.1</u>
			502.1
Canadian Pacific Railway:		Wabash Ry.—Trackage over	
Transcontinental Line in		Canadian National Rys. ....	245.4
Maine, including track-		Pere Marquette Ry.—Including	
age over Maine Central		trackage over Canada South-	
R.R. ....	201	ern Ry. ....	836.7
Branches in Maine, in-		Northern Pacific and Great	
cluding an electric rail-		Northern Rys. (jointly)—Mid-	
way .....	65	land Ry. of Manitoba; also	
Lines in Vermont, includ-		G.N. Ry. connection at Emer-	
ing trackage over Bos-		son Junction .....	75.7
ton & Maine R.R. ....	91	Great Northern Ry.—Brandon,	
Minneapolis, St. Paul & }	4,320	Saskatchewan & Hudson's Bay,	
Sault Ste. Marie Ry. }		Crow's Nest Southern, Nelson	
Wisconsin Central Ry. }		& Fort Sheppard, and Van-	
Duluth, South Shore & }		couver, Victoria & Eastern	
Atlantic Ry. ....	563	Rys. ....	349.4
Mineral Range R.R. ....	48		
Spokane International Ry. 164	<u>5,452</u>		
Total .....	7,312	Total .....	<u>1,556.4</u>

\* Average for the year 1933 in the United States; as of December 31, 1933, in Canada. Industrial and terminal railways and others in either country, unconnected at the border with railways on the other side, are not considered in this study.

† Included in the sum of these mileages, 4,931 miles, are intersystem trackage rights aggregating 105 miles, leaving 4,826 miles as the average *net* mileage of the three roads in 1933. Deducting this duplication from the total, 7,312 miles, leaves 7,207 miles as the average net operated mileage of roads in the United States operated by or in the interest of the Canadian carriers in that year.



in the main have to do with north-and-south movements between the two countries.

In their penetration of the country across the border, the rail carriers of Canada, as of 1933, have acquired control or exercise trackage rights over 7,312 miles of road in the United States, and, conversely, the American carriers possess similar privileges over 1,556 miles of road in Canada, as set forth in Table 1.<sup>8</sup>

Canadian lines, therefore, enjoy the use in the United States of nearly five times the mileage that their American brethren do in Canada.

#### DENSITY OF BORDER POPULATIONS AND RAILWAY MILEAGES

For an appreciation of the extent to which the natural advantages of the border regions have led to their development, and of the part which the interrelated railways have played in this, consideration should be given to their density of population and railway mileage in contrast with corresponding densities in sections of the two countries less blessed in respect of natural products and means of transporting them economically to domestic and foreign markets.

According to the census of 1930 the population of the United States numbers 122,775,046 within its confines, having a land area of 2,973,776 square miles. The population per square mile is therefore 41.3. In the 26 states that are assumed to be directly within the zone of influence of the border, the population numbers 73,592,985 or 58 per square mile, in contrast with 66 per square mile in the 15 states in actual touch with the border with their population of 54,929,760. It is, therefore, very evident that conditions along the frontier are such as to attract to its region the larger share of the inhabitants of the American commonwealth.<sup>9</sup>

In Canada the situation is quite similar. Of its total population of

8. *Statistics of Railways in the United States, 1933*, pp. 16-17, 106, 107, 170-172, 182-186; *Statistics of Steam Railways of Canada, 1933*, pp. 52, 59; and Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. Also see Marshall, Southard, and Taylor, *Canadian-American Industry*, pp. 113-123, 187-195, inclusive.

9. *Abstract of the Fifteenth Census of the United States, 1930* (United States Department of Commerce, Bureau of the Census), p. 13.

10,376,786, according to the census of 1931, nearly all is concentrated along the border. Somewhat more than ten million live in 8 of its provinces (excluding Prince Edward Island and the Northwest Territories), of which the combined land area is 2,001,046 square miles. Their population per square mile, therefore, is but 5 in contrast with 66 in the 15 border states of the Union, this marked difference being in large part due to the vast outlying portions of the provinces which remain only partly prospected or entirely unexplored.<sup>10</sup>

That the population of both countries has tended toward concentration along the border is also shown in the fact that their principal cities are to be found in its neighborhood. Of the 15 largest cities in the United States, all but 3 are located in the 26 states lying north of the Potomac and Ohio rivers, east of the Mississippi, and north of and including the states of Nebraska, Wyoming, Idaho, and Oregon, which are assumed to be directly influenced by border conditions. In Canada, as an outcome of the early concentrations of population along the only means of transport—the waterways—all of its leading urban communities are within a very short distance of the frontier. The need for the existing closeness of relations between the railways of the two countries is thus made startlingly apparent.

This conclusion is strengthened when the extent to which these channels of trade play a part in the affairs of the continent is fully realized. Of the 287,700 miles of owned railways in both countries in 1933, the United States contained 245,703<sup>11</sup> miles, or 85.4 per cent and Canada 41,997 miles equal to 14.6 per cent. As Canada's percentage of the continent's total population north of the Rio Grande, 133,000,000, is but 7.8 per cent, it will be seen that per capita its ratio of railway mileage is approximately double that of the United States. This is interestingly brought out in Table 2.<sup>12</sup>

10. *Canada Year Book*, 1934–35, pp. 108, 109.

11. Exclusive of the 32-mile freight-collecting electric railway of the C.P. Ry. in Maine.

12. *Abstract of the Fifteenth Census of the United States*, 1930, p. 13; *Statistics of Railways in the United States*, 1933, pp. s-3, s-5; *Canada Year Book*, 1934–35, pp. 108, 109, 699.



TABLE 2

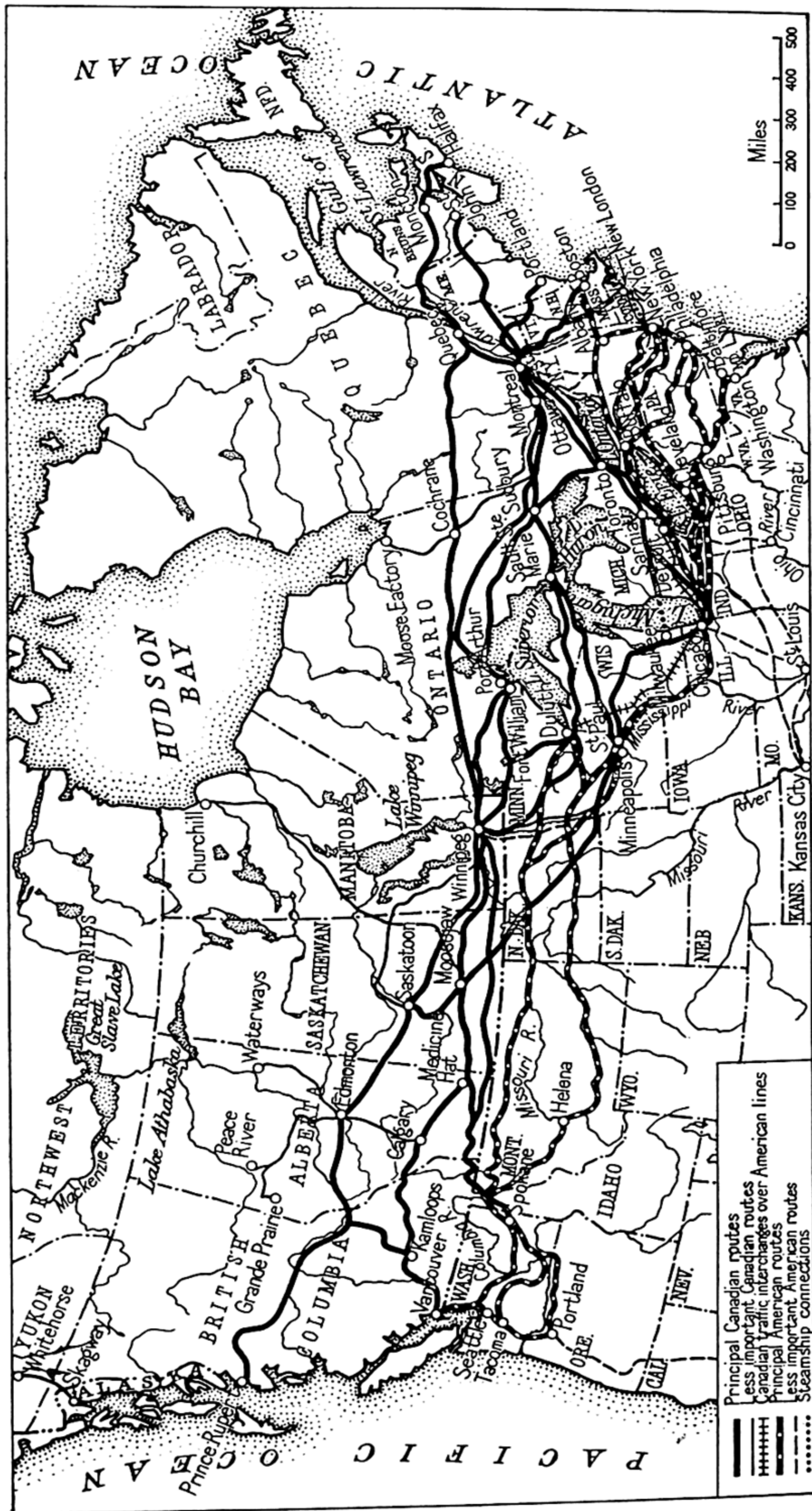
*Comparative Density of Population and Railway Mileage*

Region	Population per square mile*		Population per mile of railway*		Miles of railway per 1,000 inhabitants		Ratio, Canada to United States
	Canada	United States	Canada	United States	Canada	United States	
<b>Border Regions:</b>							
<b>Northeastern:</b>							
(Me., N.H., Vt., Mass., Conn., R.I., N.B., N.S.) .....	19.0	131.8	275	1,088	3.63	0.92	3.9
<b>Eastern:</b>							
(N.Y., N.J., Pa., Md., Del., Dist. of Colum- bia, Que.) .....	5.5	255.6	591	1,227	1.69	0.81	2.1
<b>Middle:</b>							
(Ohio, Ind., Ill., Wis., Mich., Ont.) .....	9.4	103.0	316	591	3.17	1.69	1.9
<b>Northwestern:</b>							
(Minn., N.D., Neb., Iowa, S.D., Mont., Idaho, Wyo., Manit., Sask., Alta.) .....	3.3	13.1	127	204	7.88	4.90	1.6
<b>Pacific Coast:</b>							
(Wash., Ore., B.C.)..	1.9	15.5	172	277	5.82	3.60	1.6
<b>Border regions as a whole</b> (26 states and 8 prov- inces)	5.1	58.0	247	580	4.05	1.72	2.4
<b>Other regions</b> .....	..	28.9	..	414	..	2.42	..
<b>All regions</b> .....	3.0	41.3	247	500	4.05	2.00	2.0

\* Based on census of population of 1930 in the United States, and of 1931 in Canada.

The Maritime Provinces, therefore, have nearly 4 times the railway mileage per capita possessed by the neighboring states across the border; the provinces of Quebec and Ontario twice as much; the northwestern and Pacific coast provinces more than 1½ times as much; and all 8 provinces, omitting Prince Edward Island, nearly 2½ times the railway mileage per capita in the 26 states directly affected by border influences. Canada in its superabundance of railways has a hostage to fortune far greater than the United States.<sup>13</sup>

13. In the rear of the book will be found a map illustrative of this situation and of the interrelations of the railway networks of the two countries.



*Cross-Border Railways of the United States and Canada*

## SUMMARY

The outstanding physical characteristics of the two countries have thus been touched upon lightly, as well as the nature of their principal resources, the scope and ownership of their rail connections, the comparative density of their populations, and the extent to which they have been supplied with railway facilities. In these respects they differ in marked degree. The United States, with its diversity of climate, varied products of the soil and subsoil, and enormous home consumption, is self-contained to a remarkable extent, in addition to which it is blessed with year-round seaports on three of its fronts through which access is had to the outer world. Canada, on the contrary, holds the bulk of its relatively small population, and its principal areas of production yielding much more than its domestic needs, within the narrow limits of a strip along the border from less than one hundred to some four hundred miles in width and some four thousand miles in length, with its warm-water seaports and leading coal deposits near its extremities and its more densely settled territory, industries, timber resources, and grain fields in large measure in between. Each country, at convenient points of interchange, has resources lacking in the other.

Under these conditions it is not difficult to understand why the railways of the United States should run in all directions—east, west, north, and south—in truth a closely woven network covering the entire nation and reaching beyond the border to important objectives in Canada;<sup>14</sup> nor why the Dominion, for the protection of its interests as a nation, should promote the movement of its exportable

14. The cross-border railways referred to in this and succeeding chapters do not include the English-controlled White Pass & Yukon Route (3' gauge), 111 miles in length, from Skagway, Alaska, to Whitehorse on a navigable headstream of the Yukon River in Canadian territory, of which approximately 20 miles, under the name of the Pacific & Arctic Railway & Navigation Company, lie in United States territory; 32 miles beyond the border in British Columbia, under the name of the British Columbia-Yukon Railway; and 59 miles in Yukon Territory, under the name of the British Yukon Railway. Connection between Whitehorse and Dawson in Yukon Territory and Nenana on the Alaska Railway in Alaska is made by steamers of this route on Yukon waters under the name of the British Yukon Navigation Company, Limited, and the American Yukon Navigation Company. The railway was opened in 1900.

surplus over its own soil through the creation of a multiplicity of east-and-west ocean-to-ocean transcontinental railways with numerous feeders, supplemented by its water routes from the Head of the Great Lakes to Montreal in the East and by rail extensions to great traffic centers and warm-water ports in the United States and a sea outlet on Hudson Bay. In working thus for the differing ends of their nationals in so many ways, the railways on both sides of the border, as will be explained in succeeding chapters, could not otherwise than come into intimate contact and establish interrelations for their common good.

Attention next may be paid to the evolution of the means of transportation of the two countries, from the days of the early pioneer to the arrival of the steam locomotive, and then through the succeeding decades of the railway era—ten in number—to the present time.



## CHAPTER II

### HISTORICAL OUTLINE

THE events of history have ever had a compelling influence on the selection by man of the trade routes and means of transport employed by him in the exchange of goods and the movement of persons and property from place to place. A knowledge of the causes which have led to successive changes in political boundaries and institutions and to the distribution of population and industry, is therefore necessary for a full understanding of the development of interrelated transportation in Canada and the United States, culminating as it has in the railway of the present day. No less important is some insight into the difficulties of the age-old crude methods of transport by animal power and wind, which so abruptly forced the startling change to the steamboat, and soon after to the steam railway, when effective ways at last were found to harness the newly developed source of power. Then it remains to glance at the advent of the railway as a channel of trade between the two countries and to follow its gradual expansion through the decades that followed.

#### EVENTS OF THE FIRST CENTURY, 1535-1635

To the early explorers of the continent,<sup>1</sup> and to the pioneers who followed them, are to be credited the creation of conditions of which the railway in the end became the creature. The tracing of the water courses which in the beginning were the more economical channels of trade, the overcoming of the obstacles set by nature and the hands and mind of man, and the discovery of fruitful fields of endeavor for the settler, all had their outcome in a distribution of population to which the later arrival on the scene, the railway, had to adapt itself.

It was just four hundred years ago that Jacques Cartier, in 1535, set foot on the banks of the St. Lawrence at the site of Montreal; and a hundred years later that the death of Champlain, in 1635, marked the end of the first era of discovery and settlement which began with his ascent of the St. Lawrence in 1603. During his régime the shores

1. Maps showing pathways of the explorers will be found in J. B. Brebner, *The Explorers of North America, 1492-1806* (Macmillan, 1933), pp. 258, 482, 502.

of Nova Scotia, New Brunswick, Maine, and Massachusetts were visited by him between 1604 and 1607, as were the waters of Lake Champlain in 1609, a year before Hudson in 1610 discovered the bay named after him, and as was the course of the Ottawa River in 1613, after it had been ascended two years earlier by Brulé. Then in the footsteps of Brulé and LeCaron who had preceded him, Champlain journeyed in 1615 to Georgian Bay and Lake Huron and across Lake Ontario with his Huron Indian allies to engage in battle with the Iroquois near the outlet of Lake Oneida in what is now the State of New York.

This continued warfare between the French and Iroquois, begun when Champlain had sided with the Hurons on the occasion of his first visit to the lake which bears his name, had far-reaching effects. The powerful group of Five Nations, dwelling in their "long house" in central and western New York, gave their support to the English in subsequent wars, but for nearly two centuries blocked emigration over the favorable land route from the headwaters of the Mohawk River to Lake Erie and the West. Travel to the interior thus was diverted to more southerly pathways across the Alleghenies into the valley of the Ohio, and gave the Mississippi River outlet to the sea an early lead over its potential competitor, the St. Lawrence, and the regions along the Ohio River their rapid growth in population while the shores of the Great Lakes still slumbered in solitude.

It was also during the lifetime of Champlain that Brulé ventured from Lake Ontario along the Susquehanna River to the sea, in 1615-16, and embarked on the waters of Lake Superior in 1622-23; and that Nicolet, in 1634-35, discovered Lake Michigan and Green Bay and the course of the Wisconsin River leading to the Mississippi. During his era the beginnings of Quebec and Montreal were laid, the former in 1608 and the latter as a trading post in 1611 and as "Ville-Marie" in 1642.

It is quite remarkable that while Champlain and those under him were laying the foundations of New France, colonization on a pronounced scale had taken place along the seacoast, succeeding John Smith's landing on the James River in Virginia in 1607, Hudson's voyage up the river bearing his name in 1609, and the landing of the Pilgrims at Plymouth in 1620. The Dutch, Swedes, Danes, and English clustered at the mouths of the Delaware, Susquehanna, and

Hudson rivers and spread inland along the fertile valleys of those streams and other tributaries, while the English in New England ramified in all directions from Boston, founded in 1634.

#### ENSUING EVENTS FOR FIFTY YEARS, 1635-85

The next half century, from 1635 to 1685, ended two years before the death of La Salle who was the first to journey, in 1682, from the Great Lakes via the Illinois River to the mouth of the Mississippi and return, sighting on his way the waters of the Ohio. During this time Lake Erie, the last of the Great Lakes to become known to the white man, and Niagara Falls were discovered by Chaumonot and Brébeuf in 1640; the waterway from Lake Champlain through Lake George to the Hudson was made known to Father Jogues, a prisoner in the hands of the Indians, in 1642, in which year the first junction was made by the French with the Dutch at Albany via the valleys of the Richelieu River, Lake Champlain, and the Hudson; the cross-roads of the continent beyond the Great Lakes were explored by Radisson and Groseilliers between 1654 and 1668, succeeded by Henry Kelsey first in the prairies of Manitoba and Saskatchewan in later years; the waters of James Bay were viewed by St. Simon and Albanel in 1671-72; the portage route along the Fox and Wisconsin rivers between Green Bay and the Mississippi as far as the Arkansas was traversed by Father Marquette and Joliet, in 1673; the heads of Lake Superior and the Mississippi River were visited by Duluth in 1678-79; and St. Anthony's Falls in the Mississippi, the sites of St. Paul and Minneapolis, were claimed by Father Hennepin to have been discovered by him about 1680—a brave showing indeed by the French missionaries, explorers, and traders who thus traced a thin line of discovery, encircling the English colonies east of the Alleghenies, ascending the St. Lawrence—Great Lakes to the middle of the continent and thence down the Mississippi to the Gulf of Mexico and northerly to the waters of Hudson Bay. They planted few settlements, and those insignificant, but they made known to the world the lines of least resistance which eventually were to become the inter-related highways of commerce of Canada and the United States.

Meanwhile the settlements of the English colonies to the south and east had been growing apace. Boston, New York, and Philadelphia were sowing the seeds of greatness, and Baltimore a few decades later



was to come into being—four fronts on which violent struggles for the lion's share of the foreign commerce of the two countries were to be waged in the years to come.

#### ANOTHER ONE HUNDRED YEARS, 1685–1785

Another century brought the history of exploration and settlement of the continent to the year 1785, two years after the War of the Revolution had been concluded in 1783. In the first half of this era the French had created forts and small settlements at widely separated places of strategic importance on Lake Champlain, the Great Lakes, and the Mississippi River, with which went the command of the route from Lake Erie to the site of Pittsburgh on the Ohio. The English were pressing west and northwest over and around the Alleghenies, opposed by the French who were pushing south and east from the Great Lakes and Mississippi valleys including the Ohio. Explorers as well as traders in sassafras, buckskins, buffalo hides, furs, and supplies for the Indians had found at least five avenues of approach to the interior: from the Potomac Valley to tributaries of the Ohio; from the Susquehanna River up the Juniata to waters descending the Alleghenies on the other side; from Presque Isle on Lake Erie to the valley of the Allegheny emptying into the Ohio; from the site of Toledo, likewise on Lake Erie, via the Maumee and Wabash rivers to the Ohio; and, finally, from the Atlantic seaboard through Cumberland Gap in the Alleghenies at the southwesterly extremity of the State of Virginia where Dr. Thomas Walker crossed in 1750, followed in 1769 by Daniel Boone, into the fertile country south of the Ohio. The Seven Years' War left this region in the hands of the English, as it did all the other possessions of the French on the mainland of North America.

It was not alone in the East that new lands and routes were discovered by the white man. To members of the LaVérendrye family is due the credit of having explored, between 1731 and 1744, a vast region beyond the crossroads of the continent, comprising Manitoba, western Minnesota, the Dakotas, and probably part of Montana to within sight of the Black Hills. They may be said to have pointed the way, via the valleys of the Missouri and Saskatchewan rivers, long afterward followed in the direction of the Pacific by one or the other of the interrelated transcontinental railways.



In the Far Northwest, Bering had explored the North Pacific coast as early as 1741, long after the shadowy Juan de Fuca is reputed to have visited the strait that bears his name in 1592; Henday had covered the region between Hudson Bay and the Rockies in 1754, and Hearne between 1769 and 1772 had traveled from Hudson Bay northwest to the Arctic Ocean.

The end of the Seven Years' War in 1763 and of the Pontiac War in 1766, supplemented by the Treaty of Fort Stanwix whereby the Colonies obtained title to Indian lands in the valley of the Ohio and its tributaries in 1768, witnessed the commencement of tides of immigration without a parallel in history. The knowledge of the country gained by the soldiers who had participated in the various campaigns, the lure of cheap lands to the needy and the promise of adventure to the young, led to a movement which, though checked for a time by the Revolutionary War, waxed as the inhibition of the British Government on trans-Allegheny settlement was removed and the routes to the Ohio Valley via Cumberland Gap and Pittsburgh became generally known. The presence of hostile Indians in western New York and along the southerly shores of Lakes Erie and Michigan, as well as the then inhospitable nature of the wilderness north of the St. Lawrence River and Great Lakes, long postponed their settlement; but the rich lands on the Kentucky side of the Ohio became a mecca once peace was signed in 1783.<sup>2</sup> Simultaneously an outpouring of loyalists from the United States gave impetus to the settlement of Upper Canada and the Maritime Provinces.

Until now the methods of transportation in vogue in America were almost as primitive as they were two hundred and fifty years before when Jacques Cartier sailed up the St. Lawrence. Canoes, rafts, flatboats, barges, and small sailing craft on water; and the horse and mule, the oxcart and Conestoga wagon, and, in some small degree, the stagecoach on land, were the only means by which persons and property could be transported from place to place. Trails and roads were at times hazardous if not impassable and always expensive and slow in operation, especially across the Alleghenies between the Ohio and the coastal plain. Water routes often involved

2. For the early spread of population to the valley of the Ohio, and its absence along the shores of the Great Lakes, see Plates 76 B and C in Paulin's *Atlas of the Historical Geography of the United States* (1982).

portages around rapids and falls and between headwaters of streams, although short canals were in existence at a few such places; where available they were the main reliance of the settler, however, despite the floods, droughts, and ice which made their use uncertain or closed them to travel in the winter months, and despite the difficulties, if not impossibilities, of upstream movement.

It was this highly unsatisfactory situation that caused Washington in 1784-85 to fear for the integrity of the newly established Union. The trans-Allegheny settlers increasingly used the descending waters of the Ohio and Mississippi to find a market for their products at the Spanish port of New Orleans, rather than haul them laboriously over the mountains to the ports of their own countrymen on the Atlantic coast. He recognized the need for "the nearest and best communication between the eastern and western waters . . . as a chain binding the peoples of the Mississippi valley to those of the Atlantic seaboard." Otherwise, the newly settled region on the Ohio would find that manifest destiny pointed to a separation from their brethren on the other side of the mountain barrier. An outlet for them via the Great Lakes and St. Lawrence River and through the Mohawk River gap to the Hudson was barred by hostile Indians and an alienated people beyond the border. In what later was to become a battle of the waterways, the Mississippi had a tremendous advantage over its potential rival of the North, for the passage by Congress of the North-West Ordinance in 1787 promised an additional impetus to the settlement of the lower Ohio country and the downstream flow of its products to New Orleans.

The clearing of the pathway across western New York to Lake Erie was not to take place until the treaty with the Six Nations was closed in 1794, a generation after Daniel Boone had led his followers over the crest of the Alleghenies from Virginia to the dark and bloody ground of Kentucky. Nor was the country to be opened for settlement between the Ohio River and the Great Lakes until the Indians in the same year were there defeated in battle by General "Mad Anthony" Wayne. In the preceding year, 1793, Alexander Mackenzie, in furtherance of the prior explorations of Peter Pond, had blazed a transcontinental trail to the Pacific Ocean on the north and Captain Robert Gray, in 1792, had found the mouth of the Columbia to which Lewis and Clark on the south side of the border

were to mark out a course by land from the headwaters of the Missouri in 1804-6. The time was ripe for a method of transportation that would enable the white man to enjoy the fruits of his discoveries and profit from his subjugation of the aboriginal possessors of the soil.

#### ADVENT OF THE STEAMBOAT IN 1785

At this critical moment the results of the invention of the steamboat by John Fitch in 1785 opened a new era in transportation, in which at the end of another forty years the steam railway was first to attract the eyes of a startled world. His initial steps in the application of steam to water transport were coincident with or closely followed by those of James Rumsey, later emulated by Samuel Morey, and brought to a climax in the successful voyage of Robert Fulton's *Clermont* on the Hudson River between New York and Albany in 1807. Then rapidly came the steamboat on the waters of Lake Champlain and the St. Lawrence in 1809, the Ohio in 1811, Lake Ontario in 1816, Lake Erie in 1818, and Lake Michigan in 1826. By 1817 the steamboat was in regular service between Ohio River points and New Orleans, and in 1823 had ascended the upper Mississippi to Fort Snelling near the site of St. Paul and Minneapolis, Minnesota. The new means of transport on water overcame the handicap from which the Ohio and Mississippi previously had suffered in their upstream difficulties of navigation, and gave to the thriving communities along their shores a facility thus far but meagerly enjoyed by the thinly populated St. Lawrence-Great Lakes basin. The struggle between the rival waterways was still in favor of the one flowing southward to the Gulf.

#### TURNING OF TRAFFIC TO ST. LAWRENCE-HUDSON RIVER OUTLETS

Prior to the arrival of the steamboat as a practical substitute for the canalboat, flatboat, and sailing vessel, the people of the Mississippi Valley, including that of the Ohio, awakened to the need of better highways across the mountains to the east. Routes through Canada and New York had the advantage of lakes and rivers for the comparatively economical transport of goods to market during the season of navigation; but those by land to Philadelphia and Baltimore were still wretched, as was generally the case in both the



United States and Canada. And so in 1805 Congress authorized the building of the National Turnpike or Cumberland Road, at the expense of the Government, from points of connection with highways radiating from Washington, Baltimore, and Philadelphia, westerly through Maryland, Pennsylvania, West Virginia, Ohio, Indiana, and Illinois to a junction with roads that ended at St. Louis. Actual construction having been started on this great thoroughfare in 1811, Wheeling on the Ohio was reached in 1818, Columbus, Ohio, in 1833, and St. Louis, Missouri, in 1838—a macadamized toll highway a thousand miles long which until as late as 1852, when the Baltimore & Ohio Railroad approached completion to the Ohio River, gave the great Middle West an important eastern outlet to the national capital and to the seaports of Baltimore and Philadelphia. These ports also were served by the Susquehanna and Delaware rivers which in turn were tapped at their upper waters by a growing highway system in southern and central New York. Western New York had been but recently opened to the white man through the treaty made with the Indians at the end of the eighteenth century, and such trade as trickled down the Great Lakes, in the months open to navigation, sought an alternative outlet by water down the St. Lawrence River through Canada where the highways, too, were hopelessly bad.

The end of the War of 1812, and soon after that of the Napoleonic Wars in 1815, then found the settled lower Middle West, as well as southwestern New York and western Pennsylvania, with two principal outlets through the United States to the sea—one downstream to the Gulf of Mexico at New Orleans, and the other laboriously overland across the mountains to the seaports of Philadelphia and Baltimore.<sup>3</sup> These gateways to foreign commerce also were outlets for the prospering regions of southern and central New York by

3. This does not mean that other outlets were not in existence. Turnpikes had been brought into being across the State of New York between the Hudson River and Lake Erie; and circuitous land and water routes were available from Pittsburgh to New York via Lake Erie, the Niagara Portage, Lake Ontario, Oswego, and Albany, and via the Allegheny River, Olean, and a wagon route to Albany. But they were costly to operate in comparison with waterways leading to the Gulf, especially after the coming there of the steamboat in 1811, and in comparison with the much more direct land routes over the mountains to tide, of which the Cumberland Road or National Turnpike under government auspices was to be a tremendous factor in the building up of the trade of Philadelphia and Baltimore.



means of the descending waters of the Delaware and Susquehanna rivers and their tributary highways which were coming into being. Everything was set for the pushing of the St. Lawrence—Great Lakes Waterway and its Hudson River by-pass into the background. New York, Boston, and Montreal, dependent in large part, as they were, on uneconomical means of highway access to the productive valleys of the Ohio and Mississippi, were in this respect to be marooned. The St. Lawrence—Great Lakes outlet was to lose in the battle of the waterways. It should be added that at the termination of hostilities in 1815 the British were in military control of the portion of the West lying north of mid-Illinois and mid-Iowa. However, this region below the forty-ninth parallel, then unsuspected of its tremendous resources in the way of cereals, copper, and iron, was turned back to the Americans as one of the conditions of peace.

At this critical juncture, when a veritable hegira was pouring westward from Europe and the eastern states, New York more than ever became appreciative of its danger of losing a considerable portion of the traffic of its own state, as well as that of the growing West, to its rivals on the Mississippi River and on the lower Atlantic coast at Philadelphia and Baltimore. In this, too, it had to fear the competition of Montreal, already of moment in the watersheds of the St. Lawrence River and Lake Ontario, and promising to become more so with the growth of the West and the hoped for turning of the tide of traffic northward from the Ohio. So in 1817 it commenced the creation of canals connecting the Hudson River with Lakes Erie and Champlain and with the lakes and rivers that tapped the central and southern parts of the state. Canada in this followed suit, as did the states bordering on Lakes Erie and Michigan, in their effort to divert the traffic of the Ohio from the Gulf outlet to the Great Lakes route.

The backbone to this northern system of inland waterways, remarkable in its extent and usefulness, was the Erie Canal, completed in 1825 across the State of New York, from Troy near Albany on the Hudson River to Buffalo at the foot of Lake Erie. The year before work had been started on the Welland Canal, which was opened to traffic in 1829, as was the Lachine Canal in 1825 and the Rideau Canal in 1832. In Ohio the construction of inland waterways between Lake Erie and the Ohio and Mississippi rivers was undertaken on a vast scale between 1828 and 1846, thus tending to turn the tide of

travel to the north which hitherto had flowed almost unchecked the other way. The completion of the Erie Canal system held to New York the movement of its wheat and other products which until then, to a more or less degree, had been floated down the Susquehanna to Philadelphia and Baltimore. The steamboat in the St. Lawrence-Great Lakes basin, in conjunction with the canalboat on the inland waterways of New York, Ohio, and Canada, at last began to draw to the full upon the stupendous resources of the West, tempered only by the increased movement of traffic over the mountains to Philadelphia when the Pennsylvania system of canals and portages over the Alleghenies was completed in 1834.

#### COMING OF THE RAILWAY IN THE 1830's

However, the Mississippi and its tributary the Ohio still were mighty factors in the interior movement of freight and passengers to and from the sea. To prevail against them something more speedy and reliable was required than the canal barge and steamboat, and one that could be operated in all weathers and in winter as well as in summer. Suddenly this came in the 1830's with the arrival of the steam locomotive as a practicable machine in the service of the public for the handling of passengers and freight. First built by Richard Trevithick to run on rails in Wales in 1804, this new device had been gradually improved for mine-hauling purposes until its adaptation to public service by George Stephenson on the Stockton and Darlington Railway in 1825, and the dramatic victory of his *Rocket* in the race on the Liverpool & Manchester Railway in 1829, gave a great impetus to the move for steam propulsion on land in the United States. Through the genius and sustained efforts of Oliver Evans, Col. John Stevens, John B. Jarvis, Horatio Allen, and many other Americans, as far back as 1804, the practicability of the locomotive haulage of wagons or cars had become sufficiently impressed on the business and financial interests of the country to bring about the incorporation of several railway companies in the 1820's based upon the use of horse or steam motive power or sails. Out of these beginnings came the mine railroad of the Delaware & Hudson Canal Company with its experimental *Stourbridge Lion* in 1829; the South Carolina Railroad from Charleston to Hamburg with its *Best Friend of Charleston* in 1830; and the Baltimore & Ohio Railroad with its successor to the experimental *Tom Thumb* and the Mohawk

& Hudson Railroad with its *Dewitt Clinton* in 1831. The latter road was the link in what a quarter of a century later was to become the New York Central Railroad serving Canada as well as the United States. Then came the Camden & Amboy Railroad in New Jersey with its *John Bull* in 1831, a link in the future Pennsylvania Railroad; a line out from Philadelphia with its *Ironsides* in 1832; the Boston & Lowell Railroad in Massachusetts in 1835 and the Champlain & St. Lawrence Railroad in Quebec with its *Dorchester* in 1836.<sup>4</sup> The last-named two roads became links in the first through railway that was established between the two countries in 1851.

Thus around three hundred years after the St. Lawrence was discovered by Cartier, the steam railway was brought to life in America to become, as will be seen, a prime agency in the turning of the tide of trans-Allegheny traffic from the Mississippi to the Great Lakes—St. Lawrence outlets, and the binding together of Canada and the United States in friendly accord.

During the next one hundred years, down to the present time, the railway mileage of the two countries has grown by leaps and bounds, that of Canada very slowly at first with its total of but sixty-six<sup>5</sup>

4. *Bulletin No. 39* of The Railway and Locomotive Historical Society, March, 1936, states that the steam locomotive *Dorchester*, more familiarly known as the *Kitten*, was used at the official opening of the road on July 21, 1836, and not first employed during 1837, as claimed by some writers. It appears, however, from newspaper accounts, that both horses and the steam locomotive were employed on that occasion, as was subsequently the case during the year 1836 when the *Kitten* misbehaved. In *Canadian Railway Development*, by Thompson and Edgar, attention is called to the running of the steam locomotive *Samson* in 1838 on a mine railway extending from Pictou in the Province of Nova Scotia—in 1839 according to the *Canada Year Book*.

5. Reported in *Bulletin No. 39* of The Railway and Locomotive Historical Society, March, 1936, to have been 80 miles, including:

	Year	Miles
Champlain & St. Lawrence R.R.	1836	14
Albion Mines Ry.	1838	6
Erie & Ontario Ry.	1839	10
Montreal & Lachine R.R.	1847	8
St. Lawrence & Atlantic R.R.	1850	80
St. Lawrence & Industrie R.R.	1850	12
Total		—
		80

Of these the Erie & Ontario is said to have been out of service on account of steep gradients between 1839 and 1852. The Albion Mines road is under-



miles in 1850, and that of the United States so much more rapidly as to reach the stupendous figure of approximately nine thousand miles in the same year.

### THE 1840's AND 1850's

Many events in the history of North America have had to do with the expansion of its railway systems and their interlacing along the northern international border. In Canada the troubled political and racial relations between what are now Ontario and Quebec prior to their union in 1841, as well as the long-continued failure of the Maritime Provinces and Lower and Upper Canada to agree upon the location and financing of interconnecting railways, throttled all attempts in those countries to follow the example of their neighbors across the border. After that event the development of their magnificent canal system was advanced until it had become practically completed in 1849, about the same time that the inland waterway system of Ohio had attained its growth; but railways in Canada lagged grievously behind until in the late 1840's when a combination of circumstances brought about a complete change in her attitude in this respect. Her lack of a year-round seaport within easy reach of the interior, and her dependence on channels of trade icebound in winter months, increasingly placed her at a disadvantage in her competition with American carriers for western trade; also her loss of preference in British markets after the repeal of the corn laws in 1846, coupled with the repeal of differential duties and navigation laws favoring British interests in 1848 and 1849, made a closer trade relation with the United States imperative, as in fact was brought about by the free interchange of natural products under the terms of the Reciprocity Treaty long negotiated and finally concluded in 1854. Political considerations, too, were necessitating a closer tie between the provinces, but perhaps the most compelling of all was the hunger by Canadian interests for a share of the traffic of the Mississippi basin centering at Chicago, Cincinnati, St. Louis, Milwaukee, Detroit, and other important centers in the United States.

stood to have been devoted to plant purposes only, and the Champlain & St. Lawrence by other authorities is reported to have been 16 miles in length. This apparently accounts for the discrepancy of 14 miles between the figure given by this authority and that usually quoted in this connection.



The changing situation in the United States gave special emphasis to the moves by Canadians for participation in the transport of the products of their neighbor on the south. Famine in Ireland and food shortages generally in Europe, as well as revolution in many of the European countries, gave impetus in the 1840's to the demand there for American foodstuffs, which was accentuated later by the Crimean War, the Indian Mutiny, and the British War with China in the 1850's. In addition to this the discovery of gold in California in 1848, the growing appreciation of the value of copper- and iron-ore deposits in Michigan, and the perfection of the McCormick reaper and other labor-saving agricultural devices in the 1840's and 1850's, with their enormous effect on the lowered cost of producing cereals, in combination with an unparalleled pouring of population from Europe and the eastern states of the Union into the American West, made the United States a treasure house on which to draw for the multiplying needs overseas. The settlement of the boundary disputes between Canada and the United States in 1842 in respect of the border between Maine and New Brunswick and in the Oregon country of the Far Northwest in 1846, along with the cordial relations of the two peoples which led up to the signing of the Reciprocity Treaty in 1854 and the western immigration induced by the Kansas-Nebraska Act of the same year, all had an important part in this chain of events which stimulated the creation of railway interrelations between the two countries. In addition to this the exercise of the bonding privilege, strengthened as it was in 1845, gave impetus to the movement of goods between points in each country over the intervening soil of the other and between points in each and the ports of the other.

In quick succession then came the opening of through railway connections between Boston and Montreal and between New York and Montreal over a series of roads in 1851 and 1852, respectively; between Portland, Maine, and Montreal by means of two interconnected railways in 1853; between New York and Boston in the East and Chicago in the West via lines now embraced in the New York Central system and that of the Great Western Railway of Canada across the lower peninsula of Ontario in 1855; between Calais and Princeton, Maine, involving two crossings of the border in 1856 by what is now a branch of the Maine Central Railroad; and between Montreal and Quebec in Canada and Chicago in the United States

over the Grand Trunk Railway as far as Sarnia, Ontario, and thence by traffic arrangements over American lines in 1859. Cross-water boat connections between railways in the two countries were completed in 1851-54 from Ogdensburg, New York, to Prescott, Ontario; in 1856 from Cape Vincent, New York, to Kingston, Ontario; and in 1854 from Oswego, New York, to Toronto, Ontario, as a water link in a route continued by rail in Canada to Collingwood, Ontario, on Georgian Bay, and thence by steamboat to Chicago.<sup>6</sup> Prior to this time American contact with the Canadian shores of the Great Lakes had been effected by water carriers from the Dunkirk, New York, terminus of the Erie Railroad in 1851, and from the Buffalo, New York, terminus of the New York Central chain of railroads in 1842. In 1860 the railway mileage of Canada had increased to 2,065 in contrast with the infinitesimal 66 miles of 1850, and in the United States 30,626 miles had come into being compared with 9,021 in 1850. By now the American lines had reached and gone beyond the Mississippi, but Canada's railways as yet were a long way from the prairies of the Northwest. The Laurentian Highlands blocked the way; and the feeling of nationalism in Canada had not yet crystallized into a determination to unite all of its provinces by bands of steel despite the physical obstacles that stood in the way and the paucity of traffic on a large portion of the distance from coast to coast. Meantime it was the traffic to and from the United States, via the interrelated railways, that gave to the Canadian lines the overhead business so necessary for their financial and political success, and so essential to the victory of the St. Lawrence-Great Lakes-Hudson routes over those of the Mississippi basin serving southern ports on the coasts of the lower Atlantic and the Gulf of Mexico.

#### THE 1860's AND 1870's

In the opening year of the next decade, 1860, the Grand Trunk Railway secured an extension of its rails from Sarnia, Ontario, to

6. It was on this route northward from Toronto, on October 7, 1852, that a steam locomotive, the *Lady Elgin*, first turned its wheels in Upper Canada, sixteen years after the *Dorchester's* performance on the Champlain & St. Lawrence Railroad in Lower Canada, and ten years after the chain of railroads in New York had been connected through from the Hudson River to the Niagara Frontier.

Detroit, Michigan, and in 1864 another tie between the two countries was created, this time by the Central Vermont which joined rails in Canada reaching to Montreal and Georgian Bay with those touching many New England points. Three years later, in 1867, the provinces of Ontario, Quebec, New Brunswick, and Nova Scotia at last were welded into a national entity—the Dominion of Canada—following the termination of the American Civil War in 1865 and after the Reciprocity Treaty of 1854 had been abrogated in 1866, an event that was to have an enormous effect on the development of its railway system. At the beginning of the next decade, 1870, the railway mileage of Canada had grown to 2,617 and that of the United States to 52,922. South of the frontier the Union Pacific—Central Pacific transcontinental line had been completed to the Pacific coast in 1869, thereby giving the American Union a continuous railway route from ocean to ocean which, in a political sense, accomplished what later was done in Canada to bind together its constituent parts.

In 1876, as one of the prices paid for the entry of the Maritime Provinces into the Confederation, the Intercolonial Railway was completed between Halifax and Saint John and the easterly terminus of the Grand Trunk at Rivière du Loup, Quebec. Links were also started in an intended transcontinental line, situated in British Columbia and also westerly from Lake Superior, including a branch from Winnipeg to the border where connection, in 1878, was made with the St. Paul & Pacific Railroad, afterward to be known as the St. Paul, Minneapolis & Manitoba Railway, leading to the Twin Cities and beyond in the United States. In this decade cross-border connections, too, were made in the East between railways now a part of the Canadian Pacific centering at Sherbrooke and at Farnham, Quebec, and coming together at the Newport, Vermont, gateway to the Boston & Maine system in New England, the first reaching that point in 1870 and the second in 1873. In 1871 a branch was also completed from the New Brunswick & Canada Railway, later the Canadian Pacific, to Houlton, Maine. In the latter year the famous European and North American route was opened between St. John, New Brunswick, and Portland, Maine, over rails now embraced in the Canadian Pacific and Maine Central systems, and two years later a new railway, the Canada Southern, was opened across the Ontario



Peninsula, joining the New York Central lines in New York with the Michigan Central Railroad in Michigan, at the same time that the International Bridge over the Niagara River at Buffalo (Black Rock), New York, put railways on the two sides of the border in touch with each other. Three years after this, in 1876, a branch of what is now the Canadian Pacific Railway was built into Caribou, Maine, and extended to Presque Isle in that state in 1881. In 1875 the rail gap was closed along the western shore of Lake Champlain in what is now the Delaware & Hudson Railroad connection between roads entering New York and Montreal—a route which by rail, stagecoach, and boat had been in existence since 1835. During this ten-year period the Canadian railway mileage had grown to 7,194 in 1880 and that of the United States to 93,296, both associated in traffic movement by the connections that had been created across the border.

#### THE 1880's AND 1890's

The next decade was ushered in by the extension of the Grand Trunk rails to Chicago in 1880–81, the absorption by that road of the Great Western Railway of Canada in 1882, and the extension of the Michigan Central's Canada Southern Railway across the border to a connection with the New York Central & Hudson River Railroad at Niagara Falls in 1883. Strenuous competition for the traffic of the American West, centering at Chicago and destined for the ports of Montreal, Halifax, St. John, Portland, Boston, New York, Philadelphia, and Baltimore, was engaged in by Canadian and United States carriers alike, either individually or jointly. In this competition for western traffic the Grand Trunk and later the Canadian Pacific on the northern side of the border had as competitors the New York Central, Erie, Pennsylvania, and Baltimore & Ohio railroads on the southern side, as well as the water carriers on the Great Lakes and St. Lawrence River and on the Erie Canal. Simultaneously a new development in Canada resulted in the completion of the Canadian Pacific Railway transcontinental line from Montreal to the waters of the Pacific in 1886, and among its acquisitions was the line from Winnipeg south to the boundary. This was three years after its American prototype, the Northern Pacific, had been opened between its termini at the head of the Great Lakes and the Twin



Cities and far-off Puget Sound. In Canada the Northern Pacific secured an entrance to Winnipeg and other points in Manitoba in 1888, and in the United States the Canadian Pacific, in 1890, obtained control of the Minneapolis, St. Paul & Sault Ste. Marie and Duluth, South Shore & Atlantic railways, which gave it access to the Twin Cities and the head of Lake Superior, and an alternative route from Winnipeg via the "Soo" to its lines in the Province of Ontario. In 1888 the Lime Ridge branch of the Maine Central Railroad, since abandoned, was opened from Beecher Falls, Vermont, to Cookshire Junction, Quebec, and extended a year later to a junction with the Quebec Central Railway leading to Sherbrooke and Quebec City. The year 1887 marked the passage by Congress of the Interstate Commerce Act, from which came so much that in after years affected the railway relations of the two countries. This was followed the next year by somewhat similar, but much less drastic, legislation in Canada. In the first year of the next decade, 1890, the Canadian mileage had increased to 13,151 and that of the United States to 166,702.

The decade from 1890 to 1900 was a momentous one in the history of the interrelated railways of the two countries. The Canadian Pacific completed its eastern end by gaining an outlet from Montreal to St. John, New Brunswick, across the State of Maine in 1890, and it rounded out its alternative transcontinental "Soo" route on American soil in 1893 by means of an extension of the Minneapolis, St. Paul & Sault Ste. Marie Railway to a connection on the border, at Portal, North Dakota, with its branch leading to Pasqua near Moose Jaw, Saskatchewan. Likewise, an extension in 1890 was made to Windsor in southwestern Ontario, which gave the Canadian Pacific access to American railroads at Detroit over which its traffic was handled to and from Chicago and the West. It was in 1893 that the Great Northern Railway completed its transcontinental line to the Pacific coast, followed in after years by its branch extensions to Winnipeg, Portage la Prairie (since abandoned), Morden, and Brandon in the Province of Manitoba; to Northgate, North Dakota, where connection at the border is made with Canadian National rails leading to Regina, Saskatchewan; to Sweetgrass, Montana, connecting at the border with the Canadian Pacific's line to Lethbridge, Alberta; and to Fernie, Nelson, Grand Forks, Midway, Princeton, and

Vancouver in the Province of British Columbia. On the other side of the continent the St. Lawrence & Adirondack Railway, now a part of the New York Central system, was built from the connection with its parent American line at the border toward Montreal in 1892; the Ottawa & New York Railway, also later brought under the wing of the New York Central, was constructed across the frontier in 1898 and opened to traffic two years later; the Canadian Pacific and the lines now embraced in the New York Central system joined in 1893 in the creation of the Toronto, Hamilton & Buffalo Railway for their joint service between those cities; the Wabash Railway secured trackage rights over the Grand Trunk Railway in Ontario in 1897, as a link in its route between Kansas City, Missouri, and Chicago and its eastern terminus at Buffalo, New York. It was at the end of the decade, in 1899, that the Maine Central Railroad extension was built to Calais, where connection was made with the Canadian Pacific Railway at the border and also with the Princeton branch opened, as has been mentioned, in part through Canada in 1856. In the first year of the twentieth century the railway mileage of Canada had mounted to 17,657 and the owned mileage in the United States to 193,346.<sup>7</sup>

#### THE FIRST TWO DECADES OF THE TWENTIETH CENTURY

At the opening of the new century the Rutland Railroad, in 1901, secured trackage rights over Canadian rails via Alburgh, Vermont, to Iberville Junction, Quebec, and thence to Montreal, but later transferred to the Grand Trunk via Rouses Point. Then came the prewar era of feverish activity in Canada, during which the newly born Canadian Northern Railway and the Dominion's pioneer railway, the Grand Trunk, extended and expanded their systems, in competition with the Canadian Pacific and each other, for the rapidly mounting traffic from the Prairie Provinces to the Atlantic and Pacific coasts. In this the Canadian Northern, in 1901, found it convenient to cross the border twice on its way along the valley of the Rainy River between Winnipeg and Fort William, Ontario, and once with its line branching therefrom toward Duluth, in 1907, and thence by means of traffic arrangements over the Chicago & Northwestern Railroad to Chicago. It was in this era, too, that the Pere

7. June 30, 1900.

Marquette Railway extended its service across the Ontario Peninsula, in 1903-4, from its termini in Michigan to connections with other American roads at Buffalo and Niagara Falls, New York; also that the Delaware & Hudson, in 1907, acquired its own line in Canada from Rouses Point, New York, toward Montreal, and the Canadian Pacific its own entrance into Chicago from the West, in 1909, through its control of the Wisconsin Central Railway connecting at the Twin Cities with the Minneapolis, St. Paul & Sault Ste. Marie. In the latter year the extension of the Chicago, Milwaukee & St. Paul to the Pacific coast was completed, although it made no direct connections with railways across the border. In 1910 the owned mileage of the United States stood at 240,293<sup>s</sup> and that of Canada at 24,731. The year 1915 was marked by the completion of two new transcontinental routes from coast to coast in Canada, that of the Grand Trunk terminating at Prince Rupert on the Pacific and that of the Canadian Northern ending at Vancouver on the Strait of Georgia, one cross-border connection having been effected in the same year between the Bangor & Aroostook Railroad at Van Buren, Maine, and the National Transcontinental Railway at St. Leonard, New Brunswick, and another between Kingsgate, British Columbia, and Spokane, Washington—the Spokane International Railway, which was secured by the Canadian Pacific in 1917.

So, as the World War opened, the railways of Canada spanned the continent by means of six different routes—three situated for the full distance in Canada except the Canadian Pacific's link across the State of Maine and the Canadian Northern's along the northeastern edge of Minnesota; and as many more within the United States as by-passes through traffic-producing territory south of the border. The through east-and-west American lines, within the border influence, then numbered three, with connections, from the Pacific coast to the head of the Great Lakes and Chicago; and thence six, with connections, to the Atlantic seaboard at Boston, New York, Philadelphia, and Baltimore, of which three enjoyed pathways across the intervening province of Ontario between the Detroit and Niagara frontiers. These east-and-west parallel routes, and their affiliated main lines and branches, together with numerous north-and-south cross-border connections and independent lines, really

8. June 30, 1910.



brought all of the railways of the two countries into a more or less close relation, amounting as they did after the War was ended, in 1920, to 38,557 miles in Canada and 252,845 owned mileage in the United States.

It was in these two decades that important railway legislation was enacted by the two countries—that establishing the Board of Railway Commissioners for Canada in 1903 and importantly amended in 1919; and, in the United States, the Hepburn and Mann-Elkins amendments to the original Act to Regulate Commerce, in 1906 and 1910, respectively, the Erdman Act in 1913, and the Adamson Act in 1916. The Panama Canal Act, enacted by Congress in 1912, subsequently had an enormous effect on the railways of both countries.

#### RECENT EVENTS, 1920–35

The railways of both countries went through a trying time during the War, from which those of the United States emerged with the lesser change in corporate structure. Private ownership and operation remained as it had been. In Canada, however, the desperate financial condition of the Canadian Northern, Grand Trunk, and Grand Trunk Pacific railways led to their incorporation with the Intercolonial and National Transcontinental railways, and other government-owned lines, into the Canadian National Railways system controlled by the Dominion Government, the last step in which was taken in 1923. Following this the principal extensions in Canada were the Hudson Bay Railway which reached its terminus at Churchill, Manitoba, in 1929, and opened to service in 1931, and the Temiskaming & Northern Ontario Railway which in 1932 reached the same waters, at the bay named after Captain James who had discovered it three hundred years before. In the United States there was little or no postwar railway construction; by 1933, as already mentioned, its owned railway mileage stood at 245,735, all in private hands, and that of Canada at 41,997 of which 21,727 miles were owned or controlled by the Government and 20,270 miles were under private ownership.<sup>9</sup>

9. Operated mileages 256,881 miles and 43,081 miles in the two countries, respectively, in the former of which is included the 32-mile freight-collecting Canadian Pacific Railway electric line in Maine as well as in the owned mileage.



Important railway legislation, indirectly affecting both countries, was passed by Congress in 1920 and thereafter known as the Transportation Act, the Railway Labor Act in 1926, and the Emergency Railroad Transportation Act in 1933.

As these words are written, four centuries after Cartier's discovery of the St. Lawrence and a hundred years after the railway in America first commenced to poke its way from one side of the border toward the other, a pronounced change in methods of transportation is again imminent. Competition in the air and beneath the ground, as well as by highway and on the water, are forcing the railway to abandon many of its practices of the past and adopt new ones calling for fresh capital not now obtainable from the investing public whose fingers in this have been badly burned. Much of the railway mileage of the continent has been put out of business by its competitors and will be torn up, to the further grief of its owners and of the employees who thereby will lose their jobs. Then, too, the question of government ownership, already in effect on more than a half of the railway system of Canada, is pressing to the fore. The events of history have brought us to a crisis in which the railways of the two countries indeed have a common interest.

WITH the aid of this chronological outline of the progress of transportation in step with events of history in the United States and Canada attention may be directed to the opening and use of the numerous border gateways through which their railways have been brought into close association.

## CHAPTER III

### NORTHEASTERN GATEWAYS

It was in the vicinity of the section of the border extending from the head of the rapids in the St. Lawrence at Ogdensburg, New York, and Prescott, Ontario, to its easterly terminus at Passamaquoddy Bay, Maine, that moves were first made for the joining together of the railways of Canada and the United States. The Stockton & Darlington Railway in England had no sooner been opened to public use for the transport of both passenger and freight in 1825, than the adoption of similar means was actively discussed on both sides of the border. In Canada this was prompted by her urgent need for better access to foreign markets through near-by year-round ocean ports of ample depth for ocean vessels, her own port at Montreal being icebound for upward of four months of the year and then possessing a channel depth of but ten or eleven feet. She also desired to supply her own natural products, and those of the American West, to the teeming population in New England by routes on her soil which would be in a position successfully to compete with the Erie Canal from the Great Lakes to the sea. Conversely, the people of New England looked to Canada for a near-by market for their manufactured products, and for channels of communication with the West that would free them from the payment of tribute to their New York rival. The railway with its freedom from the many limitations of the canal, coupled with its superior reliability and speed, promised to serve these ends. Moreover, in Canada there was a growing desire for dependable year-round railway communication between the provinces, for political as well as commercial reasons, even though the route in part should traverse the territory of their neighbor on the south.

#### PRELIMINARY MOVES

As early as 1829 the building of a railway between Boston and the St. Lawrence River was discussed with the object of tapping the Great Lakes traffic at Ogdensburg before it should enter the Canadian system of canals leading from there to Montreal, and its con-

struction was seriously considered at a convention called for that purpose at Montpelier, Vermont, in 1830. In the latter year consideration in Lower Canada, now Quebec, was given to the creation of a portage railway, for spring and autumn use, between the St. Lawrence River opposite Montreal and the upper end of the Chambly Rapids in the Richelieu River at St. Johns, Quebec, this to constitute a link in the long-established water route via the Hudson River and Lake Champlain between New York and Canada.<sup>1</sup> The feelers thus gropingly extended were translated a generation later into continuous bonds of steel between the two countries, over which the first train was run from Montreal via St. Johns to Boston in 1851. At the other end of this section of the border discussions of a rail connection between the St. Lawrence River and the Atlantic coast were had in 1832 when the St. Andrews & Quebec Railway was proposed in the productive valley of the St. John River within the jurisdiction of New Brunswick and Lower Canada. The project was unpopular in Lower Canada and in 1836 was brought to a halt at the request of the United States Government because of its location within the limits of territory claimed by the State of Maine. It did not come into being as a whole until 1889, fifty-seven years after it had been first broached. On the neighboring coast of Maine early plans were contemplated for a railroad to Quebec City—one from Belfast which was actually chartered in both countries in 1836, another from Wiscasset, and still another from Portland, none of which ever materialized. At Windsor, Vermont, a convention was held in 1836 for the taking of preliminary measures for a railroad in the valley of the Connecticut River and its tributary the Passumpsic, over which it was intended that Boston and New York should be connected with the cities of Montreal and Quebec—a project which was not realized until a third of a century later.

#### FIRST CROSS-BORDER RAIL COMMUNICATION

Out of this ferment of ideas and effort, however, there emerged a

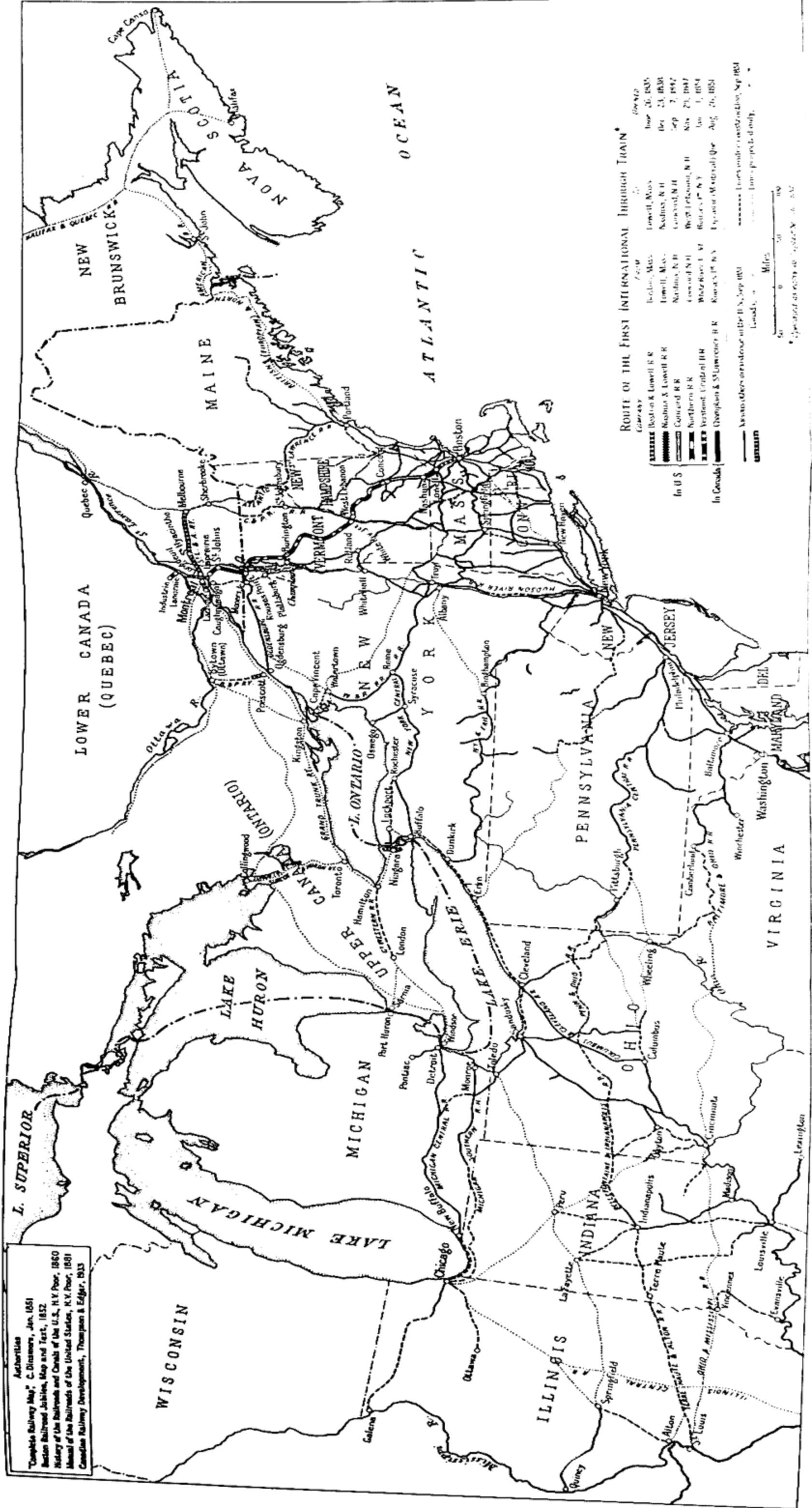
1. Advocated editorially in the *Montreal Gazette*, December 1, 1824; articles of incorporation of the "Champlain and St. Lawrence Railroad" received February 25, 1832; work started thereon in 1835; first train operated thereover, July 21, 1836 (Thompson and Edgar, *Canada Railway Development*, pp. 3-7).



succession of roads, of which a portion of the present Central Vermont Railway was the keystone, reaching continuously from Boston through Massachusetts, New Hampshire, and Vermont to Rouses Point, New York, and thence through Lower Canada to Montreal in one direction, and in the other direction through the State of New York to Ogdensburg and across the St. Lawrence by boat to a junction with a Canadian line leading from Prescott to Ottawa, Ontario—then named Bytown—through a region rich in forest products. The eastern end of this chain—the Boston & Lowell Railroad—was opened in 1835, followed by the Nashua & Lowell in 1838, the Concord Railroad in 1842, the Northern Railroad as far as the Connecticut River in 1847, the Vermont Central and Vermont & Canada allied railroads from White River Junction, Vermont, to Rouses Point, New York, January 1, 1851, and the Northern or Ogdensburg Railroad in New York from the last-named point to Ogdensburg in 1850. On the Canadian side of the border the sixteen-mile link known as the Champlain & St. Lawrence Railroad, from Laprairie, Quebec, on the south bank of the St. Lawrence, some few miles upstream from Montreal, was opened, as has been stated, with both horses and the *Kitten* in 1836, to St. Johns, and fully changed to steam motive power in 1837.<sup>2</sup> It was the first steam railway to be operated in Canada, one hundred years ago, born of the efforts, it is said, of Jason C. Pierce, an American who became a citizen of Canada and a resident of St. Johns, Quebec, in 1825. For fourteen years it served its original purpose as a rail portage in the Montreal–New York route, in which through connections previously had been established in 1835 by oxcart and stage from the south bank of the St. Lawrence to St. Johns on the Richelieu River, thence by steamboat to the head of Lake Champlain, thence by stagecoach to Saratoga and beyond by railroad to Troy, with an alternative route via the Champlain Canal to Troy, and thence by steamboat on the Hudson to the port of New York. Not until the summer of 1851 was it extended southerly from St. Johns to the connection with the Vermont Central's line at Rouses Point, and in 1852 altered at its northern end so that its new terminus at St. Lambert, Quebec, would be more nearly opposite Montreal than its old one at Laprairie. The line promoted by American interests from Prescott to Ottawa, first

2. See footnotes, pp. 37, 49, *supra*.





Railway Situation in the United States and Canada when the First Train Was Operated between Montreal and Boston in September, 1851



known as the Bytown & Prescott and then as the St. Lawrence & Ottawa Railway, was opened for its full length in 1854, a year before its scope was widened by reason of the completion of the Grand Trunk Railway from Montreal west to Prescott and beyond.

At the northern terminus of the Champlain & St. Lawrence Railroad, known as the Montreal & Champlain Railroad after 1857,<sup>3</sup> business with Montreal was transacted across the river by boat until the Victoria Bridge was opened to traffic in 1860. At the Ogdensburg-Prescott crossing of the river the traffic was handled by boat. Ogdensburg itself was made a point of interchange with a large fleet of steamers which at first furnished a daily service to and from Chicago, destined to dwindle until it practically disappeared in 1880. It should be noted that, from 1851 until the Grand Trunk Railway was opened to Upper Canada in 1857, the favorite route between Montreal and towns in Ontario was via Rouses Point and the Northern Railroad over American soil to the foot of navigation on Lake Ontario at Ogdensburg, another evidence of the closeness of transportation relations between the two countries.

The opening of the Montreal-Boston route in the fall of 1851, due more to the efforts of Charles Paine, President of the Vermont Central Railroad, than to any other one man, was made an occasion for great rejoicing by the people of both countries when a jubilee in its honor was held in Boston on September 17, 18, and 19 of that year. President Fillmore, Secretary of State Daniel Webster, and other United States government and state officials were then present, as well as many dignitaries from Canada, headed by Governor General Lord Elgin.<sup>4</sup>

It should be added that with the opening of the all-rail route from Montreal to Boston, one to New York also came into being via a roundabout course through White River Junction and over a succession of completed roads in the Connecticut River Valley and along the shores of Long Island Sound, and another and more direct one via Rutland, Eagle Bridge, Troy, and the Hudson River Railroad in the following year, 1852.<sup>5</sup> Both were less direct than their rail-

3. See p. 91, *infra*.

4. *Railroad Communication between Boston and Canada*, Boston Railroad Jubilee, 1852.

5. W. S. Rann, *History of Chittenden County, Vermont* (1886), pp. 727, 728.



and-water rival via Lake Champlain, but were without its handicaps which continued until its missing rail link was opened in 1875.

Of the group of roads thus playing their part in the opening of through rail service from New York and Boston at one end, to Montreal, Ogdensburg, and Ottawa at the other, the four in tandem between Boston and White River Junction, Vermont, were subsequently absorbed by the Boston & Maine Railroad system; the one from Rouses Point to Ogdensburg had its name changed to the Ogdensburg Railroad and then the Ogdensburg & Lake Champlain. Afterward it came into the hands of the Central Vermont Railroad and finally became a part of the Rutland Railroad. The St. Lawrence & Ottawa road in time was absorbed by the Canadian Pacific. Of the succession of roads in the Connecticut River Valley and beyond, the one from White River Junction to Windsor remained a part of the Central Vermont system, those continuing as far as Springfield, Massachusetts, fell to the Boston & Maine Railroad, and from Springfield to New York to the New York, New Haven & Hartford Railroad.

On this entire group of interrelated railways the standard gauge was adopted, 4' 8½", so that locomotives and cars could pass freely from one to the other without the transshipment of persons and property as elsewhere was made necessary where the American railroad, with its standard gauge, came in contact with the 5' 6" gauge of Canadian railways which remained unchanged until the 1870's, except where a third rail was provided for the accommodation of American equipment.

### RUTLAND RAILROAD

Under the names of the Rutland & Burlington and Rutland railroads this line was opened from Bellows Falls, Vermont, to Burlington in 1849, in which year train service to Boston was inaugurated over what is now the Boston & Maine Railroad. At Burlington a connection was made with the Vermont Central Railroad, which in the following year was extended to Rouses Point under the name of the Vermont & Canada Railroad. In 1852 the completion of railways between Rutland and Troy, New York, in conjunction with the opening of a rail route to the south along the eastern shore of the

Hudson River, afforded an all-rail route from Montreal to New York, which, as already mentioned, was less direct but better for all-year operation than the one put in service in the same year by rail from Troy through Saratoga to Whitehall, New York, thence by steamer on Lake Champlain to Plattsburg and thence by rail through Mooers Junction, New York, and Lachine, Quebec, over the Montreal & New York Railroad to Montreal, as will be explained in the succeeding chapter.<sup>6</sup> In the fall of the preceding year, 1851, a steamboat connection was also effected between the terminus of the Rutland & Burlington Railroad at Burlington and the newly established Rouses Point terminus of the Champlain & St. Lawrence Railroad on the other side of Lake Champlain, after which St. Johns ceased to be the northern end of the steamboat service which had been commenced with the *Vermont* in 1809. It was not until 1901 that the Rutland Railroad was extended from Burlington across Lake Champlain to a connection with the old Ogdensburg & Lake Champlain which meantime it had acquired, and thence from Alburgh, Vermont, to Noyan Junction, Quebec, where a junction was made with the Quebec, Montreal & Southern Railway leading to Iberville Junction and beyond over the Canadian Pacific to Montreal. In 1917 this arrangement was replaced by one which permitted Rutland Railroad passenger trains, operating as Grand Trunk Railway trains with Rutland Railroad crews and power, to run from Rouses Point to Montreal over the rails of the Canadian system. Freight movement over the Noyan Junction branch, 3.36 miles long in Canada, was discontinued some years ago. At Ogdensburg the Rutland Railroad's car-ferry connection across the St. Lawrence to Prescott, Ontario, was discontinued in 1912.

The Rutland Railroad, therefore, now operates no mileage in Canada, but affords the public through passenger-train service between Boston and New York and Montreal via Rouses Point, under an arrangement which obviates a change of cars at the border. The former exchange of traffic with the Canadian roads at Prescott, consisting of lumber and grain from the West and canned fish from the Maritime Provinces, long since came to an end. Freight interchanges with the Canadian carriers are now effected at Rouses Point.

6. P. 90, *infra*.

## CANADIAN NATIONAL RAILWAYS

In addition to its access to Rouses Point by means of a 1.1-mile extension of the old Champlain & St. Lawrence Railroad across the border just south of Cantic, Quebec, in 1851, the Canadian National Railways system reaches points in the United States by means of the Central Vermont Railway over which it exercises control, and by means of its line to Portland, Maine. The Vermont Central, now the Central Vermont Railway, went through many vicissitudes, involving the loss of its line west of Rouses Point, before in effect it became a part of the system beyond the border. Originally opened in 1849, as has been mentioned, from Burlington to White River Junction, Vermont, where connection was made with the route to Boston, and from Essex Junction near Burlington to a junction with the Champlain & St. Lawrence Railroad, at Rouses Point, under the name of the Vermont and Canada Railroad in 1851, it also opened its branch along the Connecticut River southerly to Windsor, Vermont, in 1849, where a junction was made with a series of roads over which access was had to New York and finally to New London, Connecticut, and thence by steamer to New York in 1865. In the year before, 1864, it had completed an extension from a junction point near Swanton, Vermont, to Iberville Junction, Quebec, known in Canada as the Montreal & Vermont Junction Railway, crossing the border between Highgate Springs, Vermont, and St. Armand, Quebec, and gaining an entrance to Montreal over the rails of the Grand Trunk Railway. At East Alburgh, Vermont, in 1897, it was joined by means of a 3.1-mile connection, named the Vermont & Province Line Railroad, with the Canada Atlantic Railway. The latter road, in which the line from Ottawa to Parry Sound was incorporated in 1896, in turn was absorbed by the Grand Trunk in 1905 and now is a part of the Canadian National Railways extending from the junction with the Central Vermont through Ottawa to Depot Harbor, Ontario, on Georgian Bay and thence by steamer to Milwaukee and Chicago.<sup>7</sup> In 1899 the Central Vermont was brought under the control of the Grand Trunk and now is the route over which the Canadian National Railways gain access to New England points, including Boston and the port of New York.

A dramatic episode in the history of the chain of railroads between

7. See footnote, p. 12, *supra*.



Boston and Rouses Point, of which the Vermont Central was the leading one, was the notable part its executives, in coöperation with influential Canadians, played in the move in 1865-67 to make it the nucleus of an international railway extending from its terminus, in northern Vermont, through Canada via Montreal to Sault Ste



*Canadian National Gateways between the Province of Quebec and New England*



Marie, thence through the states of Wisconsin and Minnesota to the Red River and thence through the Canadian Northwest to the Pacific. The idea then came to naught, but from it later sprang the Northern Pacific extending westward from the head of Lake Superior on the American side of the border to Puget Sound, and the Canadian Pacific reaching from ocean to ocean entirely on Canadian soil excepting its short-cut across the State of Maine.<sup>8</sup>

While the adopted gauge on the Central Vermont system was from the start 4' 8½", that of its connection at Montreal was 5' 6", thus necessitating a break of bulk at that point of interchange. This was a serious handicap to this route in competition with the Boston & Albany–New York Central standard-gauge through line for Chicago and St. Louis business. It did not disappear until the gauge of practically all the Canadian railways was changed to 4' 8½" in the 1870's.

Of the 457 miles of road operated by the Central Vermont, 432<sup>9</sup> miles are in the United States and 25.33 miles are in Canada, on which 236,575 tons of revenue freight were handled in 1933. Of this, 7,265 tons originated on this road and 194,483 tons were received from other roads in Canada, a total of 201,748 tons which in large part moved south through the St. Armand–Highgate Springs gateway into the United States. In the other direction 34,827 tons were carried in that year. The character of the traffic so handled in Canada is indicated in Table 3.<sup>10</sup>

Manufactures and miscellaneous in 1933, therefore, came first in volume of movement, forest products next, and agricultural products third, the larger proportion by far moving southbound into the United States.

Although possessing but one border crossing of its own, the Central Vermont has, as already pointed out, direct connection with the rails of the company by which it is controlled, the Canadian National Railways, which crosses the border between Noyan Junction, Quebec, and East Alburgh, Vermont. The combined traffic of both gateways is given on page 61.

8. See p. 124, *infra*.

9. *Statistics of Railways in the United States, 1933*, p. 16; 430 miles reported by the carrier in 1934.

10. *Statistics of Steam Railways of Canada, 1933*, pp. 130–185, inclusive.

TABLE 3

*Central Vermont Tonnages through St. Armand-Highgate  
Springs Gateway in 1933*

	<i>Originating on C.V. Ry.</i>	<i>Received from Other Roads in Canada</i>	<i>Received from Foreign Connections including C.V. Ry. in U.S.</i>	<i>Total</i>
Agricultural products	4,803	36,910	11,905	53,618
Animal products	111	944	192	1,247
Mine products	1,416	12,504	3,028	16,948
Forest products	63	68,774	3,660	72,497
Manufactures and miscel- laneous	872	75,351	16,042	92,265
Total	7,265	194,483	34,827	236,575

The ambitious plans made by the Grand Trunk management under Mr. Hays in 1904 for the expansion of the Central Vermont system in Massachusetts, Connecticut, and Rhode Island came to naught, but this Canadian outlet through the United States remains a most potent factor in the differential rate situation in the East, as will be explained in another chapter.

While Boston, New York, and Montreal were thus connected by rail through Rouses Point in the early 1850's, Portland, Maine, entered the field as another rival for the trade of the Canadas and a share of the traffic moving over their magnificent system of waterways from the American West to tidewater. It also aspired to a place in a through rail route between Upper and Lower Canada and the Maritime Provinces in which differences of opinion as to location and financing of such a railway entirely on their own soil had resulted in a stalemate. Mention has been made of the abandonment of the St. Andrews & Quebec project in 1836 because of the Maine-New Brunswick boundary dispute. After this was settled in 1842, surveys were made for alternative intercolonial routes between Halifax and Quebec, one in the fertile valley of the St. John River favored as a commercial venture by New Brunswick, and the other, completed in 1848 by Major Robinson, on a circuitous course remote from the border through an unproductive wilderness preferred by Great Britain for military reasons. These motives were found to be

irreconcilable, and for many years the Canadas and the Maritime Provinces were without rail communication entirely under their own flag.

At this juncture John A. Poor of Portland stepped into the arena, in 1843, and advocated the building of a railway from Montreal to his city, as an ice-free outlet for the through traffic of the West moving in Canadian channels and for the local trade of the flourishing Eastern Townships in Lower Canada. With this he proposed the construction easterly from Portland of a railroad through Maine to Saint John, New Brunswick, and Halifax, Nova Scotia,<sup>11</sup> and thence to Cape Canso at the extremity of Nova Scotia, beyond which a shortened ocean voyage in conjunction with a rail journey across Ireland, a jump by water to Holyhead, and travel by rail through England, would, it was claimed, save several days in the passage of passengers and mail between New York and London. It will be seen that his project really was intended as an international all-rail connection between Montreal and the Maritime Provinces, via territory south of the border that promised rewards in traffic not to be had in the wilds of eastern Canada. In this, Portland was to be the focal point. The idea, backed also by two leading citizens on the north, Joseph Howe of Nova Scotia and Alexander T. Galt of Lower Canada, won support in both countries and resulted in the formation of the St. Lawrence & Atlantic Railway in Lower Canada, and the Atlantic & St. Lawrence Railroad in Maine, which met at the border between Stanhope, Quebec, and Norton Mills, Vermont, and were opened for traffic between Longueuil, Quebec, opposite Montreal, and Portland on July 18, 1853. In the same year they were taken over by the Grand Trunk Railway. As will be explained later, the project easterly from Portland languished for many years and after its long-deferred completion in 1871 was incorporated in the Maine Central and Canadian Pacific systems on the two sides of the border, respectively.

At Portland this Canadian line not only established its own port facilities but also there made contact with the Portland, Saco &

11. Proposed by Henry Fairbairn in 1832 as a rail way for wagons from Halifax, via Saint John, to join with systems which, it was claimed, would soon connect New York and Boston with all New England (Thompson and Edgar, *Canadian Railway Development*, p. 3). Also see p. 67, *infra*.



Portsmouth Railroad, a standard-gauge line to Boston, now owned by the Boston & Maine Railroad, which was opened in 1842 with steamship connections to Saint John, New Brunswick, and Halifax, Nova Scotia. Its 5' 6" gauge was subsequently adopted by practically all the Canadian roads, including its lessee the Grand Trunk, and had already been adopted by the connecting series of Maine railroads of which the first link easterly was opened in 1849 and gradually extended as proposed by Mr. Poor through Waterville and Bangor to the boundary at Vanceboro in 1871. Various reasons were advanced for the use of a wider gauge than the standard in general use on the American railroads with which the Canadian lines would have relations. One was that the 5' 6" gauge would permit more economical operation, another that the break of bulk at points of contact with connecting railroads would be advantageous to local interests, still another that this obstacle to the interchange of cars with connections would prevent the theft or unduly long detention of such equipment by foreign roads and that the change of cars at transition points would afford passengers healthful exercise. Along with these went the further argument that a difference in gauge would prevent the diversion of traffic to competing regions or the dominance of the carriers of one region by those of another having diverse interests to serve. Perhaps the moving influence in the reaching of a decision of such widespread importance in Canadian affairs, was the voice of the chief engineer of the joint line between Portland and Montreal, Alvin C. Morton, who as an engineer of the Erie Railroad had no doubt become impressed with what he conceived to be the merits of the 6' 0" gauge adopted by that line in the 1830's. As we now look back, the reasons then given for adopting the wider gauge were puerile or shortsighted, and in any event not to be given any weight whatsoever against the use of a uniform gauge usable by all carriers of both countries as in fact came about in Canada and the states north of the Potomac and Ohio rivers in the 1870's.

From this recital it will be seen that lines of the Canadian National Railways come in contact with the border at one gateway—near Rouses Point, New York—where connection is made with American carriers, and that they cross the border at three gateways—near East Alburgh, Highgate Springs, and Norton Mills, Vermont. From these points of crossing the Canadian National Rail-

ways continue south as controlled lines aggregating 432 miles within the Central Vermont system, 3 miles of connections in Vermont, and 172 miles to the sea at Portland, a total of 607 miles<sup>12</sup> operated by or in the interest of Canadian railways in the Northeastern Region where New England and also a corner of New York adjoin the provinces of New Brunswick and Quebec. By their means the Canadian National Railways are furnished access to ice-free ports in the United States and to a large portion of the producing and consuming population of New England as well as the metropolitan region of New York. The approximate total tonnages, revenue and non-revenue, and the character of traffic moving through their four gateways in the years 1929 to 1934, inclusive, are shown in the table that follows.<sup>13</sup>

A number of instructive conclusions are to be drawn from this showing. The total movement to the United States far exceeded the movement to Canada, the only exception occurring at the Cantic-Rouses Point gateway where the predominating flow of traffic was northbound. The volume of movement as a whole in each direction dropped sharply to the extent of 50 per cent between 1929 and 1933. At one of them, however—the Stanhope-Norton Mills gateway—the falling off was more pronounced than at the others, due no doubt to the dwindling of export trade through Portland, in conformity with Canada's policy to favor her own ports at Halifax and Saint John.

One other feature will attract attention, and that is the importance of these four gateways as means of access by the differential routes of the Canadian National Railways both to the eastern termini of that great system in the United States and to the producing and consuming population of New England.<sup>14</sup>

12. As reported by the Interstate Commerce Commission in 1933; see p. 20, *supra*.

13. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

14. Data dealing with the Canadian National Railways, including their predecessors, the Grand Trunk, Canadian Northern, and other roads, will be found in the various works listed in the Bibliography, *infra*, and in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

TABLE 4

## Canadian National Tonnages through Northeastern Gateways, 1929 to 1934

	Central Vermont Ry. Gateways				Cantic, Que.- Rouses Point, N.Y.	Grand total
	Stanhope, Que.- Norton Mills, Vt.	St. Armand, Que.- Highgate Springs, Vt.	Noyan Junction, Que.- East Alburgh, Vt.	Total		
1929 To U.S. From U.S.	938,750 891,094 <u>1,824,844</u>	398,682 118,772 <u>517,404</u>	1,011,881 641,649 <u>1,653,030</u>	1,410,018 760,421 <u>2,170,434</u>	515,876 758,437 <u>1,273,813</u>	2,859,189 1,909,952 <u>4,769,091</u>
1930 To U.S. From U.S.	667,811 858,923 <u>1,021,734</u>	203,840 88,067 <u>291,907</u>	878,304 539,524 <u>1,417,828</u>	1,082,144 627,591 <u>1,709,735</u>	489,720 662,070 <u>1,151,790</u>	2,239,675 1,643,584 <u>3,883,259</u>
1931 To U.S. From U.S.	447,665 250,782 <u>698,897</u>	133,562 70,408 <u>203,965</u>	872,844 435,632 <u>1,308,476</u>	1,006,406 506,035 <u>1,512,441</u>	409,272 452,313 <u>861,585</u>	1,863,343 1,209,080 <u>3,072,423</u>
1932 To U.S. From U.S.	837,825 195,289 <u>532,614</u>	427,830 114,034 <u>541,864</u>	526,323 809,624 <u>835,947</u>	954,153 423,658 <u>1,377,811</u>	278,520 303,978 <u>582,498</u>	1,569,998 922,925 <u>2,492,923</u>
1933 To U.S. From U.S.	305,480 208,710 <u>514,190</u>	217,750 27,416 <u>245,166*</u>	676,515 368,315 <u>1,044,830</u>	894,265 895,731 <u>1,289,996</u>	288,408 298,990 <u>587,398</u>	1,488,153 903,431 <u>2,391,584</u>
1934 To U.S. From U.S.	850,439 216,546 <u>566,985</u>	236,236 2,300 <u>238,536</u>	676,221 417,639 <u>1,093,860</u>	912,457 419,939 <u>1,332,396</u>	340,464 424,009 <u>764,473</u>	1,603,860 1,060,494 <u>2,663,854</u>
Character of shipments To U.S.	Fruit, feed, flour, pulp, pulpwood, dairy products, meat, autos, beer, merchandise.	Lumber, pulpwood, pulp, corn, paper, asbestos, fish, merchandise.	Wheat, feed, flour, fruit, meat, dairy products, paper, autos, merchandise.		Lumber, pulp, paper, asbestos, merchandise.	
From U.S.	Pulp, paper, sar- dines, scrap, con- duits, merchandise.	Feed, tobacco, cot- ton, granite, lime, rubber, cores, ex- tract, merchandise.	Coffee, granite, hides, paper, bag- ging, rubber, merchandise.		Tobacco, fruit, vegetables, coal, slate, oil, steel, soda, merchandise.	

\* For character of revenue freight in this year, as reported in *Steam Railway Statistics for Canada, 1933*, see p. 57, *supra*.

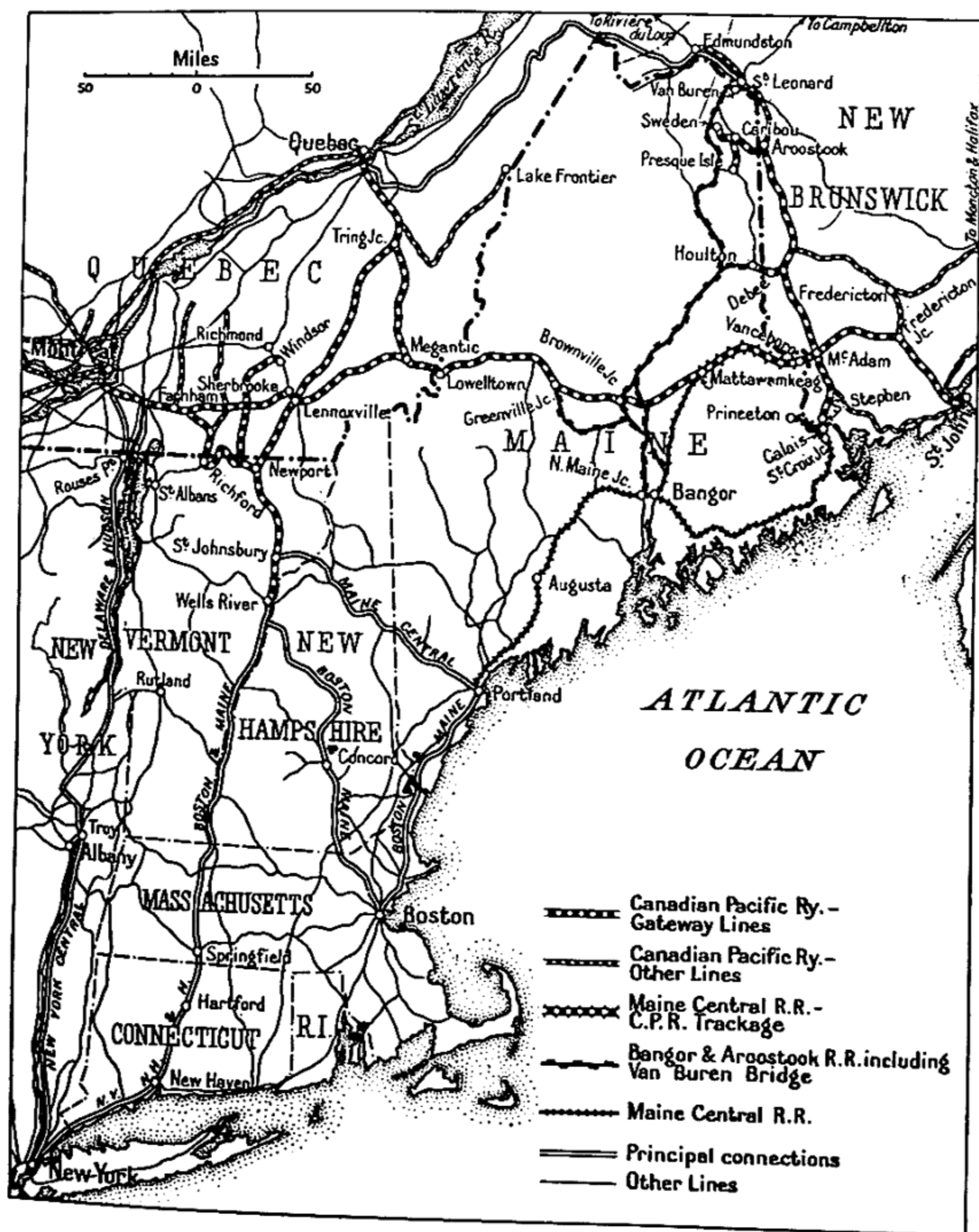


## CANADIAN PACIFIC RAILWAY

The railroad proposed at the Windsor, Vermont, convention in 1836, to connect lines leading to Boston and New York with others leading in Canada to Montreal and Quebec, via the Connecticut River Valley north of White River Junction, Vermont, went forward by fits and starts. Under the name of the Connecticut & Passumpsic Rivers Railroad, afterward acquired by the Boston & Maine Railroad, it was started at Windsor in 1845 and slowly built northward until it reached Wells River, Vermont, in 1848, St. Johnsbury, Vermont, in 1852, Barton in 1858-59, Newport in 1863, and finally the boundary near North Derby, Vermont, in 1870, where it made a connection with a road organized in its interest, the Massawippi Valley Railway,<sup>15</sup> extending therefrom to Lennoxville, Quebec, and thence in 1873 by means of trackage rights over the Grand Trunk Railway to Sherbrooke. In 1871 the South-Eastern Railway in Quebec was extended from Farnham to a crossing of the border near Richford, Vermont, beyond which a connection, under the name of the Missisquoi & Clyde Rivers Railway, crossing and recrossing the border twice, was made in 1873 with the Boston & Maine's Connecticut & Passumpsic Rivers Railroad at Newport, Vermont. In 1883 these lines, uniting at Newport from the west and east, were leased by the Canadian Pacific Railway, which in 1926 also leased the line south of Newport, as far as Wells River, Vermont, from the Boston & Maine Railroad. Mention, too, should be made of the branch from North Troy, Vermont, on the Richford-Newport line, built in 1911 as the Midland Railroad of Vermont to the border and extending thence to Mansonville and beyond to Windsor Mills in the neighboring province of Quebec. Through the border gateways near Richford and North Derby flows the traffic of the Canadian Pacific Railway from Montreal and Quebec to Wells River and thence to Boston and New York over the rails of the Boston & Maine and New York, New Haven & Hartford railroads, with access, too, over the Maine Central Railroad to Portland. The length of line so operated by the Canadian Pacific in the State of Vermont in 1935 aggregated 91.5 miles.

15. Leased to the Connecticut & Passumpsic Rivers Railroad, a subsidiary of the Boston & Maine Railroad, and subleased by the latter to the Canadian Pacific's Quebec Central Railway.

Across the State of Maine the Canadian Pacific carries its trans-continental traffic on its way to and from the Maritime Province ports of Saint John and Halifax, by means of its own rails for 144.6 miles from the border near Lowelltown, Maine, easterly to Matta-



*Canadian Pacific, Maine Central, and Bangor & Aroostook Gateways between the Provinces of Quebec-New Brunswick and New England*

wamkeag, Maine, and therefrom by means of trackage rights over the Maine Central Railroad for 56.8 miles to Vanceboro on the eastern border of Maine, where it rejoins its own rails in the Province of New Brunswick. Between its two border gateways to this State the Canadian Pacific, therefore, operates over 201.4 miles of line, of which its own section was originally the International Railway Company of Maine, afterward acquired by the Atlantic & Northwest Railway and opened to traffic in 1889.

In eastern Maine the Canadian Pacific has access to the rich potato region in Aroostook County, by means of branches from its New Brunswick line in the valley of the St. John River. The one from Debec, New Brunswick, to Houlton, Maine, built under the name of the Houlton Branch Railroad and completed in 1871, crosses the border near the latter place; and that from Aroostook, New Brunswick, built under the name of the Aroostook River Railroad through Fort Fairfield in 1876 to Caribou, Maine, and extended in 1881 to Presque Isle, crosses the border just east of Fort Fairfield, Maine, the two embracing 32.4 miles within the limits of the United States. In addition to this the 32.1-mile electrically operated Aroostook Valley Railroad, controlled by the same company, serves as a feeder for the last-named branch, so that altogether 64.5 miles of Canadian Pacific lines are employed in eastern Maine as collectors of local traffic which in large part thus moves to the American market through New Brunswick and Maine.

The Canadian Pacific comes in contact with an American carrier, the Maine Central Railroad, at two points of interchange on the Maine border. The first of these is at Vanceboro, Maine, on the route between Saint John, New Brunswick, and Portland, Maine, originally proposed by John A. Poor in 1843. The portion lying in New Brunswick, known as the European & North American Railway, went through a most checkered career, despite its rosy prospects as a link between the Maritime Provinces and American markets and a means of shortening the ocean voyage between New York and London. Work on it was started at Saint John in 1853, then stopped, and finally revived in earnest in 1864. It was completed in 1871 and leased to the Canadian Pacific in 1890, along with the other parts of the New Brunswick Railway in which had been incorporated various lines in the Province. In this combination were included the above-



mentioned branches to Houlton and Presque Isle, Maine, and the one from which they sprang on the site of the old St. Andrews & Halifax project paralleling the border of Maine and finished to its terminus at Edmundston, New Brunswick, in 1878. The other point of contact with the Maine Central is at St. Stephen, New Brunswick, opposite Calais, Maine, to which a branch of the system leased by the Canadian Pacific was built in 1896, and opened to Milltown, Maine, in 1897.

Ten gateways or crossings of the border, therefore, give the Canadian Pacific Railway entrance to the northeastern region of the United States, affording access to 357.4 miles of controlled railway on American soil over which in 1935 it operated its trains either through lease or ownership or the enjoyment of trackage rights. Two of these are openings whereby the company's transcontinental line from coast to coast is spared a wide detour to the north around the tip of Maine, six give access to New England in general, including Boston and Portland as well as New York, and two afford means of entrance to a highly productive region in the State of Maine. Through them approximate total tonnages, revenue and non-revenue, flowed from 1929 to 1934, inclusive, in the volume set forth in Table 5.

It is of interest that Canadian Pacific through traffic moving across the State of Maine without affecting American interests between the Lowelltown and Vanceboro gateways, estimated at 774,000 tons, was approximately two thirds that originating at, and destined to, New England points by the routes of that system through its five gateways centering at Newport in northern Vermont in 1933.<sup>16</sup>

#### MAINE CENTRAL RAILROAD

Second only in time of early gropings toward a rail connection between the United States and Canada was the opening of the Bangor & Piscataquis Canal and Railroad between Bangor and Old Town, Maine, in 1836, one year after the Boston & Lowell road in Massachusetts had been started on its way toward the Champlain &

16. Data bearing on the history of the Canadian Pacific Railway will be found in the works referred to in the Bibliography, *infra*, and in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

TABLE 5

## Canadian Pacific Tonnages through Northeastern Gateways, 1929 to 1934

	<i>Lines through five gateways centering at Newport, Vt.*</i>	<i>Megantic, Que.— Lowelltown, Me.</i>	<i>McAdam, N.B.— Vanceboro, Me.</i>	<i>Three branch-line gateways in eastern Maine</i>	<i>Total</i>
1929 To U.S. From U.S.	904,629 826,108 <hr/> 1,730,732	.... .... ....	.... .... ....	.... .... ....	.... .... ....
1930 To U.S. From U.S.	829,910 831,285 <hr/> 1,661,195	.... .... ....	.... .... ....	.... .... ....	.... .... ....
1931 To U.S. From U.S.	730,434 726,042 <hr/> 1,456,476	.... .... ....	.... .... ....	.... .... ....	.... .... ....
1932 To U.S. From U.S.	523,375 604,113 <hr/> 1,127,488	.... .... ....	.... .... ....	.... .... ....	.... .... ....
1933 To U.S. From U.S.	528,431 633,848 <hr/> 1,162,279	.... .... 900,000†	.... .... 800,000†	.... .... 150,000†	.... .... 3,012,279†
1934 To U.S. From U.S.	509,408 648,116 <hr/> 1,157,524	.... .... ....	.... .... ....	.... .... ....	.... .... ....

\* Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

† Rough estimates far from exact but considered reasonably accurate for this purpose; see Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36, letters from Comptroller Canadian Pacific Railway; also density diagram accompanying report of the Royal Commission to Inquire into Railways and Transportation in Canada, 1931-32.

St. Lawrence Railroad in Lower Canada, also opened in 1836. From this small beginning came the series of roads built from Portland to Vanceboro, now a part of the Maine Central system, culminating October 9, 1871, in the opening of the European & North American Railroad as the last link in the chain between Boston and the Maritime Provinces, at which President Grant and the Governor General of Canada, accompanied by numerous officials of both countries, were present to celebrate the event. It was by this route that the potato farmers of Aroostook County, Maine, at last were given an outlet over rails through the two countries to the American market, and the people generally along the seacoast on both sides of the border an opportunity of exchanging their products other than by water and highway. The dream of John A. Poor had come true after nearly a third of a century of persevering effort and waiting, just as his life came to an end.<sup>17</sup>

Another early start in the system of Maine railways was the opening of the Calais Railway as a horse railroad soon after 1832, changed in name to the Calais & Baring Railway in 1849 and put in operation by steam in 1852. It was originally intended that this road should form a part of the European & North American route between Portland and Saint John, afterward diverted to the north so as to pass through Vanceboro. From Baring a branch, under the name of Lewy's Island Railroad, was built in 1856 to Princeton, Maine, traversing the soil of New Brunswick en route for a distance of 5.1 miles. Both companies, under the name of the St. Croix & Penobscot Railroad, were absorbed by the Washington County branch of the Maine Central Railroad, opened in 1899 as an extension of the Maine Central Railroad from Bangor to Eastport and to Calais where contact, at Milltown Junction, Maine was made for the interchange of freight with the line in New Brunswick that is now a part of the Canadian Pacific system.

In the upper valley of the Connecticut the Maine Central in 1890 leased the Upper Coos Railroad from North Stratford, New Hampshire, to the border at Beecher Falls, Vermont, and thence the Hereford Railway to Lime Ridge, Quebec. The portion in Canada was abandoned in 1925, so that the Maine Central now operates no mileage beyond the border. Its contacts there with Canadian carriers are

17. See p. 58, *supra*.



confined to the ones at Vanceboro and Calais, including the trackage rights granted the Canadian Pacific between Vanceboro and Mattawamkeag.

Reference previously has been made to the abortive early efforts of Wiscasset, Belfast, and Portland to gain connections with Quebec. An extension of the branch of the Maine Central, now ending at Kennebago, into the Province of Quebec was proposed in 1907, but nothing came of it. A more ambitious plan, set forth in 1884, was the proposed extension of the Somerset Railroad, now ending at Kineo and a part of the Maine Central, as a means of access by the Canadian Pacific Railway to the Maine seacoast. This, too, failed of accomplishment. On the Quebec side of the line, the Levis & Kennebec Railroad was built in 1874 between Harlaka Junction and St. Joseph, Quebec, with the intent to connect with the Somerset road, but that was as far as the project got and in 1881 it was sold to the Quebec Central Railway and now is a part of the branch of the Canadian Pacific system which terminates at Lake Frontier, Quebec, on the Maine border. Maine has been the grave of many hopes for an increased intimacy of contact with its neighbor on the north.

Mention again should be made of the gauge question which proved to be as embarrassing on the Maine Central as on the Grand Trunk. Through the influence of John A. Poor and others the 5' 6" gauge was adopted on the line in Maine first built in 1849 and gradually extended from its junction with the Grand Trunk Railway easterly to the border at Vanceboro and thence to Saint John, New Brunswick. The economic losses and inferior service to the public from this cause, together with the demonstrated advantages of unity of operation, led to the consolidation of a large part of the Maine railroad system in 1862, under the name of the Maine Central, and in 1871 to the change of gauge on the entire system to 4' 8½" as far as its eastern terminus at Bangor, with a resulting lessening of time in the movement of freight between Bangor and Boston from four days to one day. This left the Grand Trunk and European & North American roads with the wider gauge until the time came a few years later when the gauge on practically all the roads in Canada was standardized prior to the advent of the Canadian Pacific. While it lasted this difference in gauge seriously impaired the quality and economy of service between and through the two countries.

At the two points of border interchange, in 1933, approximately 191,310 tons of revenue and non-revenue freight were received from, and 40,173 tons delivered to, the Canadian Pacific at Vanceboro, exclusive of the traffic of that road moved by its own power over the Maine Central, a total of 231,483 tons; and 5,733 tons were received from that company and 252 tons delivered to it at Calais (Milltown Junction), a total of 5,985 tons. These exchanges were but one third those of the peak year, 1928.<sup>18</sup>

### BANGOR & AROOSTOOK RAILROAD

A desire to promote international good will along with closer trade relations primarily had to do with the inception and gradual advancement of the railway that united Lower Canada and the Maritime Provinces by way of the State of Maine. Political motives for the moment were cast aside. The advantages of military protection that would be afforded by a circuitous route far from the border on the north, even though pressed by the British Government, were not considered by the Canadian people to be sufficiently important to turn their backs on a much more productive route located in part on foreign soil. And so the international route finally was completed when the European & North American gap was closed in 1871, five years ahead of the intercolonial all-Canadian line between Halifax and Quebec.

However, it was not alone on the Canadian side of the border that the political question pressed to the fore. The settlement of the Northeastern Boundary dispute by the Webster-Ashburton Treaty in 1842 left the people of Maine with a feeling of resentment that forest and agricultural lands to which they had laid claim in the valley of the St. John were lost to them. They felt that in connection with the building of the European & North American line, railroad communication should be afforded their Aroostook County as a measure for military protection corresponding to that proposed by the British Government on the other side of the border, as well as a means for the development of the region from the agricultural standpoint. Therefore, in giving its aid to the European & North

18. Data bearing on the history of the Maine railroads will be found in the book on that subject by Edward E. Chase, and in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

American project about the time of the Civil War, the State of Maine made the condition that a branch line along the border should be built into Aroostook County. Nothing came of this, and for more than twenty years after the opening of the European & North American Railroad in 1871, the farmers of eastern Maine were dependent on Canadian railways for their outlets to markets on the American side of the border.

The opening of the Canadian Pacific's line across Maine, and its lease of the New Brunswick Railway and controlled lines in 1890, aroused public sentiment in the State and from this came forth the chartering of the Bangor & Aroostook Railroad through the efforts of Albert A. Burleigh and Franklin W. Cram in 1891, commencement upon its construction in 1892, and its gradual expansion until in 1910 it had a system extending from Searsport on the Atlantic coast on the south, to Van Buren on the border river of St. John at the northern tip of the State, connecting at intermediate points with the Maine Central and Canadian Pacific railways and serving the same territory in which the latter company had previously gained a foothold in the neighborhood of Houlton, Caribou, and Presque Isle.

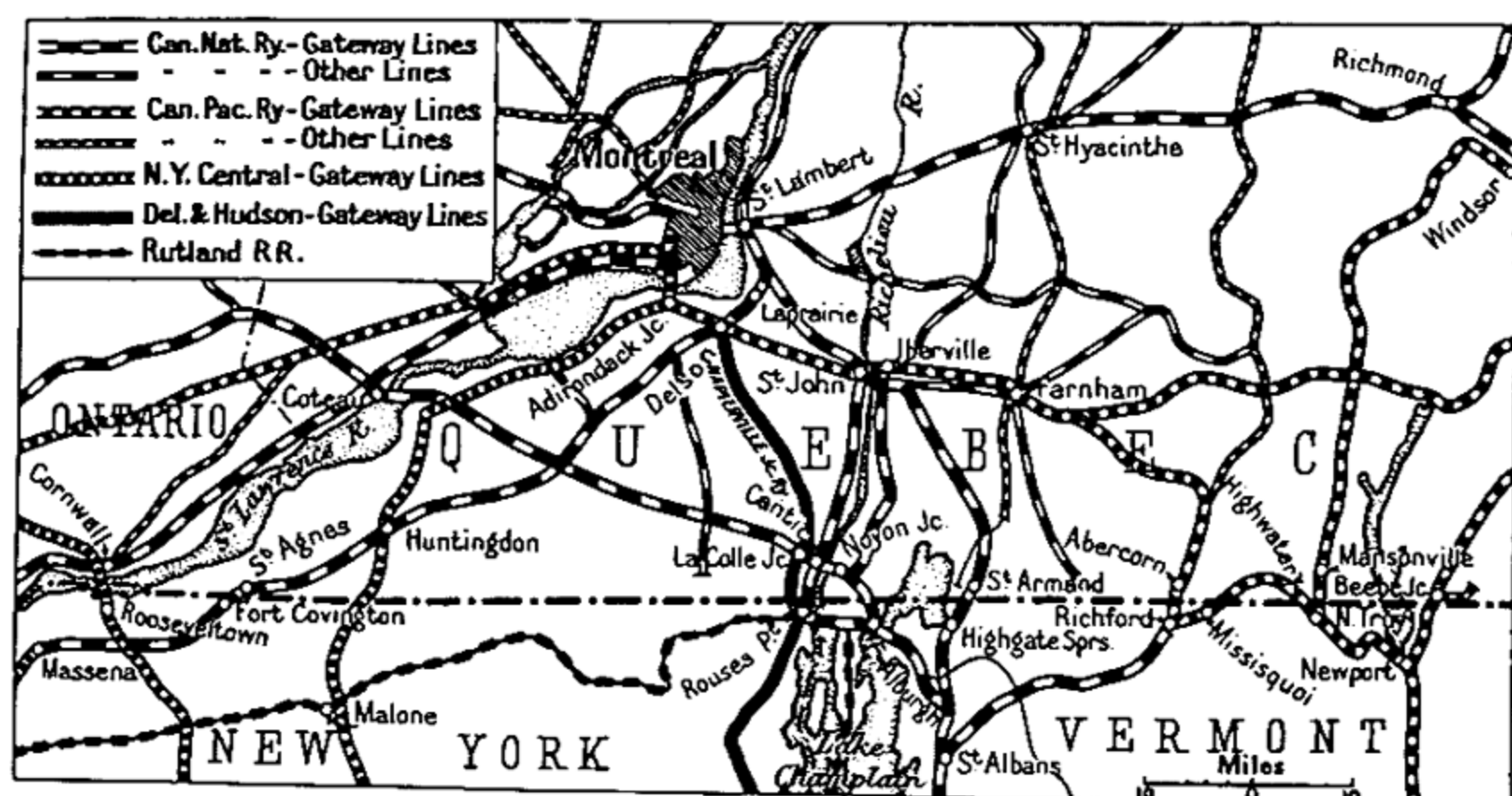
In 1915 the system was carried across the St. John River to St. Leonard, New Brunswick, under the name of the Van Buren Bridge Company, and there connected with the newly completed National Transcontinental Railway of Canada and with the International New Brunswick Railway, now included in the Canadian National system extending through a timber country to Campbellton on Chaleur Bay. The event was celebrated at an enthusiastic gathering of leading citizens from both countries on the day of the opening, May 1 of that year. The portion of this extension beyond the National Transcontinental Railway since has been removed, leaving 0.3 of a mile now in operation in Canada.

#### SUMMARY—NORTHEASTERN GATEWAYS

For the sake of convenience the location of the various border crossings and the mileages operated in 1935 by or in the interest of the nationals of each country beyond the border are set forth in some detail in Table 6.<sup>19</sup>

19. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. For official data for 1933, see p. 20, *supra*.





*Railway Network in the Gateway Area between Montreal and the American Border Region*

The Canadian holdings beyond the border, 964.1 miles, are therefore far in excess of the American holdings of but 5.4 miles in Canada.

The relative importance of these gateways is brought out in Table 7, showing revenue and non-revenue approximate tonnages for 1933.<sup>20</sup>

It will be seen that apart from the Canadian Pacific Railway cross-Maine traffic the tonnage moved from Canada into the United States somewhat exceeds the movement in the reverse direction. If the tonnages moved by the two Canadian carriers through their respective gateways are combined, it will be found that the Canadian National's figure, 2,391,584 tons, is 54 per cent in excess of the Canadian Pacific's, exclusive of the latter's cross-Maine traffic. In a word, the Canadian National may be said to affect the affairs of the northeastern states much more intimately than its rival which, in addition to its local New England traffic, here uses the soil of the United States as a convenience in the handling of its business from one Canadian province to another. In the last-named respect the situation is analogous to that prevailing in the peninsula of Ontario where American carriers profit from the use of Canadian territory for their through east-and-west traffic.

20. See pp. 61, 66, and 69, *supra*.

TABLE 6

*Northeastern Gateways and Cross-Border Mileages*

<i>Railway Systems</i>	<i>GATEWAYS</i>		<i>Canadian holdings in the U.S.</i>	<i>Operated miles beyond the Border</i>	<i>American holdings in Canada</i>
	<i>In the United States</i>	<i>In Canada</i>			
Rutland R.R.	Rouses Point, N.Y.	Cantic, Que.	..	..	..
Canadian National Rys.	Rouses Point, N.Y.	Cantic, Que.	1.3	..	..
	East Alburgh, Vt.	Noyan Jc., Que.	3.1	..	..
	Highgate Sprs., Vt.	St. Armand, Que.	429.8	..	..
	Norton Mills, Vt.	Stanhope, Que.	172.2	..	..
	Vanceboro, Me.	McAdam, N.B.	0.3	..	..
			<hr/> 606.7	<hr/> —	<hr/> ..
Canadian Pacific Ry.	Richford, Vt.	Abercorn, Que.	91.5	..	..
	E. Richford, Vt.	Highwater, Que.			
	North Troy, Vt.	Mansonville, Que.			
	North Troy, Vt.	Highwater, Que.			
	North Derby, Vt.	Beebe Jc., Que.			
	Lowelltown, Me.	Megantic, Que.	201.4	..	..
	Vanceboro, Me.	McAdam, N.B.			
	Ft. Fairfield, Me.	Aroostook, N.B.			
	Houlton, Me.	Debec, N.B.	64.5	..	..
	Calais, Me.	St. Stephen, N.B.	..	..	..
			<hr/> 857.4	<hr/> —	<hr/> ..
			..	..	..
Maine Central R.R.	Vanceboro, Me.	McAdam, N.B.	..	..	..
	Calais, Me.	St. Stephen, N.B.	..	..	..
	St. Croix Jc., Me.	....	..	5.1	..
	Woodland, Me.	....	..	..	..
Bangor & Aroostook R.R.	Van Buren, Me.	St. Leonard, N.B.	..	0.3	..
			<hr/> ..	<hr/> —	<hr/> 5.4
Total existing mileage served through 17 different gateways*			<hr/> 964.1	<hr/> 5.4	<hr/> 5.4

\* Sixteen properly includible in the Northeastern Region list, as Rouses Point is situated in the Great Lakes Region.

TABLE 7

## Summarized Tonnage Interchanges through Northeastern Gateways in 1933

Gateways (U.S. stations)	Interchanging railway systems	From Canada to the U.S.	Tonnages interchanged From the U.S. to Canada	Total
Highgate Sprs., Vt. }	C.N. Rys. and C.V. (C.N.) Ry.	894,265	895,781	1,289,996
East Alburgh, Vt. }				
North Derby, Vt. }				
North Troy, Vt. (2) }	C.P. Ry.	528,481	683,848	1,162,279
East Richford, Vt. }				
Richford, Vt. }				
Rouses Point, N.Y. }	C.N. Ry., Rutland R.R., and D. & H. R.R.*	288,408	298,990	587,398
Norton Mills, Vt. }				
Vanceboro, Me. }				
Houlton, Me. }	C.P. Ry. and Me.C. R.R.	191,810	40,178	231,483
Ft. Fairfield, Me. }				
Van Buren, Me. }				
Calais (Milltown), Me. }	C.P. Ry. and C.N. Rys.	.....	150,000†	150,000†
Princeton Br., Me. (2) }				
Total, exclusive of C.P. Ry. cross-Maine traffic	Me.C. R.R.	.....	.....	.....
		2,213,627	1,727,704	8,941,831
Lowelltown, Me.	C.P. Ry. cross-Maine traffic	.....	.....	900,000†
Vanceboro, Me.	C.P. Ry. cross-Maine traffic	.....	.....	800,000†
Total at 17 different gateways in 1933				5,641,831

\* Exclusive of the D. &amp; H. R.R.'s through traffic over its own rails in Canada.

† Rough estimates. See note beneath table on page 66, *supra*.



It should be added that the total traffic handled in 1933, approximately 5,600,000 tons, was something like half of that moved across the border at these gateways at the peak of so-called prosperity in 1928 or 1929. From what follows in succeeding chapters it will be found that this ratio or over obtains quite generally along the entire border from the Atlantic to the Pacific.

The average railway mileages operated in the New England Region in connection with the border gateways in 1933 were as follows:<sup>21</sup>

TABLE 8

*Operated Mileages in New England Region**Miles*

American roads with border contacts		
Rutland R.R. (exclusive of 3 miles in Canada)	410	
Maine Central R.R. (exclusive of mileage in Canada)	1,082	
Bangor & Aroostook R.R.	605	
	<hr/>	2,097
Canadian lines in the United States		
Canadian National Rys. (exclusive of C.V. mileage in Canada)	607	
Canadian Pacific Ry. (including electric railway in Maine)	357*	
	<hr/>	964
Total mileage of railways directly connected with border		3,061
Roads indirectly connected with border gateways		
Boston & Maine R.R.	2,146	
New York, New Haven & Hartford R.R.	2,077	
Others	393	
	<hr/>	
Total mileage of railways indirectly connected with border		4,616
Grand total (all classes)		7,677*

\* Includes duplications where the Canadian lines have trackage rights over American railways.

In total, therefore, there are 17 gateways or crossings in the section of the border extending from Rouses Point on Lake Champlain to Passamaquoddy Bay in Maine, through which 43,081<sup>22</sup> miles of

21. *Statistics of Railways in the United States, 1933*, pp. 16, 170, 182.

22. As of December 31, 1933.

operated line on the Canadian side of the border have direct access to 964 miles that are operated by or in the interest of the Canadian systems in the New England Region, and to an additional 2,097 miles belonging to American carriers, a total of 3,061 miles in the United States having a direct relation to the Canadian carriers. By means of traffic arrangements an additional 4,616 miles in New England are to be considered, thus making a total of 7,677 miles with which the 43,081 miles of railways in Canada have direct and indirect relations. Upward of 10 million people on the north are in this manner brought into friendly contact with more than 8 million of their neighbors on the south. Moreover, to those on the north is given the opportunity of thus binding together their eastern provinces by means of a short-cut across the State of Maine—a winter substitute for the St. Lawrence River when locked in ice.

## CHAPTER IV

### GREAT LAKES GATEWAYS

FOLLOWING the close of the War of the Revolution, as has been pointed out, a sharp rivalry arose for the mastery of the export trade of the early settlements on the Ohio. Nature favored the use of the descending waters of the Mississippi basin to New Orleans, until the removal of the Indian barriers in western New York and along the southerly shores of Lake Erie, and the advent of the steamboat, had given the ports of the upper Atlantic and St. Lawrence an opportunity to compete with the Gulf outlet on fairly even terms. Then, as was but natural, the allied business interests in the East themselves fell apart and struggled for a lion's share of the trade thus won from their common opponent. Montreal, Boston, New York, Philadelphia, and Baltimore were in the race, soon to be joined by Portland, Maine, Quebec, Saint John, New Brunswick, and Halifax, Nova Scotia.

By 1837 the ports from New York to Baltimore had been interconnected by a chain of railways and canals, and their hinterlands by similar means had been reached in some degree. New York had its waterway consisting of the Hudson River and the Erie Canal to Buffalo, New York, at the eastern end of Lake Erie and thence by lake and canal to the Ohio, supplemented by the seventeen-mile Mohawk & Hudson Railroad portage cut-off for passenger service between Albany and Schenectady. It likewise had the through route by river and lake, stage and canal, supplemented by a short rail link in each of the countries, to the city of Montreal on the St. Lawrence. Philadelphia had a combined railway, canal, and river route over the Alleghenies to Pittsburgh and thence by the Ohio to the inland empire along its course. Baltimore had its railway and canal route to the base of the mountains and thence the great National Turnpike or Cumberland Road to the Ohio country. Boston, too, had the beginnings of competitive routes to the interior—those directed toward Montreal and Portland as described in the previous chapter, another toward Worcester, Massachusetts, on its way to the Hudson River and Erie Canal at Albany, New York, and a third to

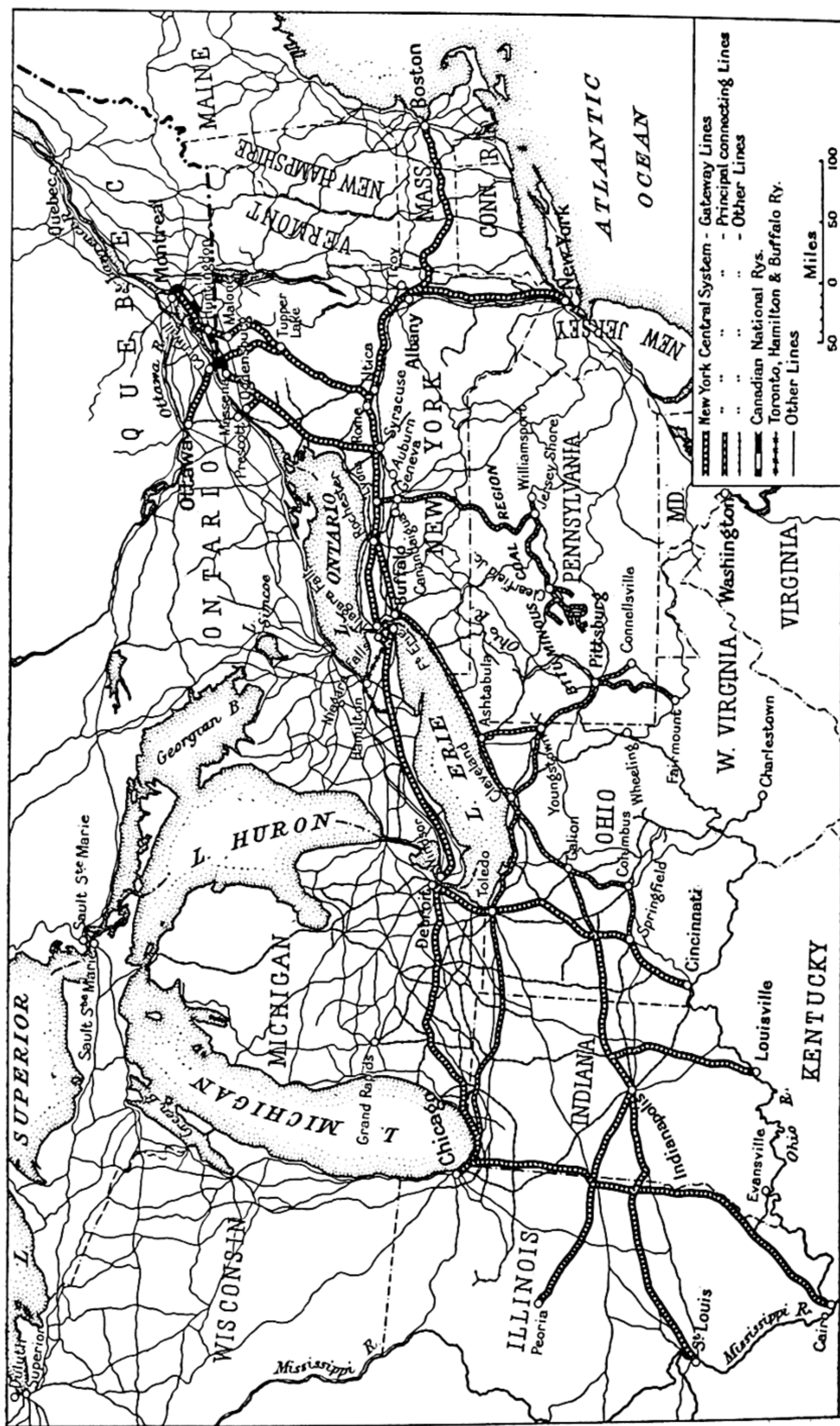


Providence, Rhode Island, on Narragansett Bay. The Canadian ports were still without rail supplements to their magnificent channels of trade by water, except the one already mentioned between Laprairie and St. Johns in Lower Canada, which served as a portage in the Lake Champlain route to New York.

Then railway construction in the United States went forward by leaps and bounds. By the early 1850's Portland, Boston, and New York, as has been described, were in touch by rail with Montreal and Ottawa; New York had two all-rail routes to Chicago; Philadelphia and Baltimore were connected by railways with the valley of the Ohio. The immensity of the fertile American West, and its promise of enormous outpourings of natural products then in great demand overseas, gave increasing impetus to western railway expansion. By 1853 Cincinnati on the Ohio already gave promise of becoming a railroad center of importance, St. Louis soon after was connected with the East by rail, the Mississippi was bridged for the first time in 1856 and several railroads had reached its banks before that time. By 1859 the rail frontier had been extended to the Missouri River at St. Joseph, Missouri, and Chicago at the foot of Lake Michigan was rapidly becoming the collecting point by rail for the products of the West which sought economical outlets by a variety of courses to the sea.

As has been explained at length, Canada awakened somewhat belatedly to the need for ties by rail with New England, but after that she lost no time in stretching forth her hands for a share of the east-bound American traffic from the West, and for close communion with carriers on the south which saw the wisdom of joining with the Canadian railways for the interchange of passengers and freight. Reciprocally, the people of the United States in general sought the use of the Canadian channels of trade for purposes of interchange and as alternative outlets to the East, in competition with their own in respect of both service and rates. Their rail carriers in certain instances also found it to their advantage to traverse the intervening territory of Canada in passing from point to point in their own country.

The middle section of the border affected by these conditions extends from Rouses Point on Lake Champlain, 761 miles from its easterly terminus at Passamaquoddy Bay, to the mouth of the Pi-



*New York Central Gateways between the Eastern and Middle States and the Provinces of Ontario and Quebec*

geon River at the upper end of Lake Superior, a distance of approximately 1,353 miles. Combined, these two sections span slightly more than a half of the entire distance across the continent. In what follows is given an account of the places, time, and manner of puncture of the middle section of the border by the railways of the two countries in their common interest.

#### NEW YORK CENTRAL LINES

Incorporated at the instance of George W. Featherstonhaugh in the year that followed the opening of the Erie Canal in 1825, the Mohawk & Hudson Railroad, seventeen miles long, was opened in 1831 between Albany and Schenectady, in order that canal passengers might avoid the long slow detour through Troy. Horses were employed to haul the cars between the steamboat terminus on the shore of the Hudson River and the foot of an inclined plane on which they were raised and lowered by a stationary engine to and from a high plateau where a long level stretch permitted the use of a steam locomotive between the eastern edge of the escarpment and the top of a similar incline that had its lower end at the canal alongside the Mohawk River at Schenectady. Unlike the early beginnings of the through rail route between Boston and Montreal, this first step in what was eventually to become a part of a great trunk line serving both the United States and Canada had no promise held forth to it of such a destiny. It was intended to be a portage road pure and simple, and was forbidden by the terms of its charter to charge more for freight tolls than were then in force on the Erie Canal. Its expansion westerly was not to be brought about in an orderly sequence of successive extensions having a definite goal in sight, but rather by the coalescence in time of fragments originally intended to serve purposes of a local nature only.

The second of these fragments was opened in 1836 between Schenectady and Utica; then the far-removed stretch from Rochester to Attica in 1837; next the road at the western end of the State connecting Niagara Falls, then called Manchester, with Lockport on the Erie Canal in 1838; then two lines in the middle of the State joining Utica and Auburn via Syracuse in 1839; then the extension from Auburn to Rochester in 1841; and finally the road that was opened from Attica to Buffalo in 1842. In the year that followed,



1843, through trains were in operation between Albany and Buffalo with but one change of cars—at Rochester. The service, however, was very poor. Strap rails were still in use, as were the inclined planes between Albany and Schenectady. Because of its poor track and equipment and disunity of management this ramshackle route had grave difficulties with which to contend, as was also the case in the field of traffic in which it sought for revenue. One of its sections was not permitted to carry freight to the detriment of the Erie Canal in the open season; another was forbidden to carry freight at all; still another was compelled to pay to the State, on what it did carry during the open season, such sums as would have been paid had the goods been moved by canal; and a fourth was required to pay canal tolls throughout the entire year. Even in the passenger service, to which they looked in large part for their return, the group of roads had to contend with hostile stagecoach and cartage interests on the highways, and with canal competition. On the east they gained an outlet to Boston when the railroad later known as the Boston & Albany was opened through in 1841, but the physical connection across the Hudson River between Albany and Greenbush was established at first by means of a car ferry which was not replaced by a bridge until 1866. On the west their outlet was by the Great Lakes, as there were no railways at that time in Upper Canada.

In the next ten years there was little change in the situation beyond the supplying of rail connections, where missing, between contiguous carriers and the elimination of the inclines between Schenectady and Albany in 1844, the replacement of strap iron with "T" rails between 1847 and 1849, the opening of a line between Lockport and Rochester in 1852, and the complete abolition of canal tolls on freight transported by rail in 1851. The last-named change was brought about by the competition that resulted from the opening of the rival Erie Railroad from the Hudson River through southern New York to Dunkirk on Lake Erie in the same year. It was of vast importance in removing the fatal barrier which until then had blocked the handling of freight traffic by rail from the rapidly growing West, including the fruitful peninsula of Ontario, to the sea.

No sooner had this ban been lifted in 1851 than there was a tremendous jump in the movement of freight over the chain of rail-

roads between Albany and the Niagara Frontier. Five of them united with other American interests in a subscription to the stock of the projected Great Western Railway of Canada (known before 1853 as the Great Western Railroad) which, as the successor in 1845 of the London & Gore Railway<sup>1</sup> had been authorized to build from the Niagara Frontier to Windsor, Ontario, opposite Detroit, Michigan. It was considered by them that with the Canadian route attached to theirs, "no line of roads can be built from New York or New England to the valley of the Mississippi whose line will be so short or straight with such easy grades, or so well adapted in any particular to the carrying trade between the Atlantic and the growing millions of the Northwest." The line now known as the Michigan Central Railroad from Detroit to Chicago was about to be completed for its entire length, and in fact was so opened in 1852; and the Hudson River Railroad on the east bank of that stream also was opened from Greenbush opposite Albany to the port of New York in 1851. By 1854 the Great Western was completed from Niagara Falls, Ontario, to Windsor, and a year later the bridge over the Niagara Gorge, a short distance downstream from the Falls, was finished and the rails of the Canadian road joined to those of the New York group of ten separate roads which had been consolidated in 1853 under the name of the New York Central Railroad. The Great Western, against its will, had adopted the 5' 6" Canadian gauge, but this handicap was overcome by the laying of a third rail between the two frontiers so that American cars could pass from one country to the other without break of bulk. It was in this respect that the New York Central-Great Western-Michigan Central route had a tremendous advantage over its Grand Trunk rival which was unable to interchange rolling stock with its American connections because of its wider gauge.

In the year 1853 short-cuts were opened as alternatives to the original zigzag route between Syracuse and Rochester and between Batavia and Buffalo, so that the New York Central Railroad then came into possession of its present main line, splitting at Rochester on its way west to connect in one direction with the Great Western Railway of Canada at Suspension Bridge, and in the other direction with lines of steamboats on the Great Lakes which terminated at

1. Incorporated as early as 1834.

Buffalo. At the same city it also connected with the route later known as the Lake Shore & Michigan Southern Railway along the south shore of Lake Erie, which had established a through connection to Chicago in 1853.

Upon the completion of the railway suspension bridge<sup>2</sup> over the Niagara Gorge in 1855 a through rail route, therefore, came into existence over five connecting systems—the Hudson River, the Boston & Albany, the New York Central, and the Michigan Central railroads in the United States and the Great Western Railway in Canada—between the ports of New York and Boston and the growing entrepôt for the western traffic at Chicago, traversing in succession the states of New York and Massachusetts, the lower peninsula of the province of Ontario and the states of Michigan, Indiana, and Illinois. The two points of border crossing were at the site of the suspension bridge on the Niagara Frontier, and at the Detroit River between Windsor, Ontario, and Detroit, Michigan, where the shores were connected by means of boats.

By this route through the Suspension Bridge and Detroit gateways a fourth all-rail tie was thus forged between the two countries in 1855, the previous ones having been opened in 1851 between Montreal and Boston, in 1853 between Montreal and Portland, Maine, and in 1854 between Ottawa and Boston and New York via Ogdensburg, New York.

There was the still earlier through water-and-land route opened between New York and Montreal in 1835, in which a short rail link in what is now the Delaware & Hudson Railroad played a minor part; also the water-and-rail route made possible between New York and Boston and the Canadian and American West in 1854 when a railway from Toronto on Lake Ontario to Collingwood, Ontario, on Georgian Bay was put in touch by steamboat with Oswego, New York, and thence via the Oswego & Syracuse Railroad, opened in 1848, with the group of roads which became known as the New York Central. Nevertheless, the Suspension Bridge gateway, in the true sense of the word, is entitled to the earlier place given to it in the development of the railway interrelations of the two countries.

The Great Western Railway continued as the principal traffic connection between the American carriers in New York and Michi-

2. See pp. 159 *et seq.*, *infra*.



gan until the Canada Southern Railway was opened as a rival route in 1873, the same year in which a new cross-border gateway was created through the building of the International Bridge over the Niagara River between Black Rock, a suburb of Buffalo, New York, and Bridgeburg, a point in Fort Erie, Ontario. When the Great Western was absorbed by the Grand Trunk Railway in 1882, the Michigan Central Railroad leased the Canada Southern as a concluding move in the steps that it had taken to free its traffic from the dominance of a rival system. A branch from the Canada Southern was built to Suspension Bridge, New York, in 1883, crossing the border by means of a cantilever bridge over the Niagara Gorge near the site of the Grand Trunk's suspension bridge, later replaced by a steel arch.

In 1910 the car ferry connecting the Canada Southern and Michigan Central between Windsor, Ontario, and Detroit, Michigan, was replaced by an electrically operated double-track tunnel, thus introducing an all-rail link<sup>3</sup> that in 1866 had its counterpart in the substitution of a bridge for a car ferry at the crossing of the Hudson River at Albany. Meantime the original New York Central Railroad and the Hudson River Railroad had been united under the name of the New York Central & Hudson River Railroad in 1869, and in turn, since 1930, that company with the Boston & Albany, Michigan Central, and Canada Southern roads, together with its alternative Lake Shore & Michigan Southern line on the south side of Lake Erie, as well as other roads, have become integral parts of the New York Central Lines extending from Boston and New York to Montreal on the St. Lawrence, to Chicago, Illinois, on Lake Michigan, to St. Louis, Missouri, and Cairo, Illinois, on the Mississippi and to Pittsburgh and Cincinnati on the Ohio.

At the present time, then, the New York Central utilizes two gateways at the Niagara Frontier and one at the Detroit Frontier, in connection with its Canadian link, 224 miles long, across the peninsula of Ontario.

From this New York Central backbone several ribs have been extended to the border separating New York State from the provinces of Quebec and Ontario. The Watertown & Rome Railroad, ulti-

3. Joined with other Canadian carriers at Windsor, Ontario, by means of the belt line known as the Essex Terminal Railway.

mately absorbed into the Rome, Watertown & Ogdensburg Railroad and now a part of the New York Central system, was opened to Cape Vincent, New York, in 1852, and four years later was there put in touch by steamboat with the Grand Trunk Railway across the St. Lawrence River at Kingston, Ontario. For many years a very busy point of interchange, Cape Vincent gradually dwindled in importance as Buffalo forged ahead, until it has ceased to be a factor to be considered. Oswego, too, is a point that formerly took a prominent part in the railway interrelations of the two countries before the inadequacy of the Welland Canal for deeper-draft lake vessels brought Buffalo to the fore. Reached in 1848 by the Oswego & Syracuse Railroad, now a part of the Delaware, Lackawanna & Western Railroad, and in later years by branches of the Rome, Watertown & Ogdensburg and by the main line of the New York, Ontario & Western Railroad, it was originally connected by steamboat lines with American and Canadian railways which have since turned in other directions for their traffic. It is now living in the hope that the recently deepened Welland Canal will restore it to its old importance. Morristown, New York, was another gateway to Canada for many years after the rails of what is now a division of the New York Central were joined by car ferry, in 1880, with the railway across the St. Lawrence at Brockville, Ontario; this connection, like the one at Cape Vincent, is no longer in use. At Ogdensburg, however, the rails of the same company, after they had reached that terminus in 1861, were joined by car ferry with those at Prescott, Ontario, which have since become parts of the Canadian National and Canadian Pacific railways. This gateway to Canada is still in active use by the New York Central.

The roads that were consolidated under the name of the Rome, Watertown & Ogdensburg, in 1861, had not alone a local purpose. Four years before that date their northeastern end was connected with the Northern (Ogdensburg) Railroad leading to a junction with the Champlain & St. Lawrence Railroad at the Rouses Point gateway. Subsequently, the Utica & Black River Railroad, which reached Clayton on the St. Lawrence in 1869 and Ogdensburg in 1870, was made a part of the Rome, Watertown & Ogdensburg system.

Thus in 1857 the New York Central had an outlet from Rome, New York, and several years later from Utica, New York, by means

of traffic arrangements over connecting lines to points in Ontario and Quebec centering at Montreal. In 1877-78 the Rome, Watertown & Ogdensburg had absorbed the newly completed Lake Ontario Shore Railroad west of Oswego, which gave it a route under its own control all the way from the Suspension Bridge gateway to Norwood, New York, where its traffic was turned over to the old Northern (Ogdensburg) Railroad for movement to Montreal. In 1886 its line was further extended to Massena Springs, New York, to connect with the Grand Trunk's line in the United States leading through Fort Covington, New York, also to Montreal.

Through its lease of the Rome, Watertown & Ogdensburg Railroad in 1891 the New York Central, therefore, came into possession of another exit from the two Niagara Frontier gateways over its own rails to the Ogdensburg-Prescott gateway, and also by means of traffic arrangements over American and Canadian connecting rail carriers to Montreal via the Rouses Point and Fort Covington gateways. Still another exit from the Niagara Frontier had been gained by the New York Central, some seven years before, through its lease of the West Shore Railroad, over which traffic from its Canadian connections, including the Wabash Railroad, had an outlet to Weehawken, New Jersey, at the port of New York and to Boston and other New England points served by the Fitchburg and Boston & Maine railroads through Rotterdam Junction, New York.

But the New York Central was not satisfied with approaches to Montreal from the west only. In 1892 the Mohawk & Malone Railroad in New York and the St. Lawrence & Adirondack Railway in Quebec were jointly opened as a new route northerly from Utica and Herkimer, New York, crossing the border between Malone, New York, and Huntingdon, Quebec, and continuing thence to Valleyfield, Quebec, and thence over leased rails of the Grand Trunk to Beauharnois, beyond which a newly built line, the Southwestern Railway, was made ready in 1897 as far as Caughnawaga (now known as Adirondack Junction), a distance of some forty-seven miles from the border. From the latter point access to Montreal was secured by means of trackage rights over the Canadian Pacific. Although operated by the New York Central since 1898, it was not until 1905 that that company acquired full control of this line, prior to which it had acted as agent for the owners. Branching from this route



at Tupper Lake, New York, is the New York Central's route to Ottawa, Canada, crossing the border at the St. Lawrence River between Nyando (Roosevelt town), New York, and Cornwall, Ontario, and continuing for some fifty-nine miles to its terminus where connection is made with Canadian carriers. Opened across the border in 1900, its portion in New York, under the name of the Ottawa & New York Railroad, acquired the Canadian end, called the Ottawa & New York Railway, and both were absorbed by the New York Central in 1913. They have been operated by the New York Central under lease since 1916.<sup>4</sup>

Through its two gateways at the Niagara Frontier and the one at the Detroit River, and those on the north at Ogdensburg, Roosevelt town, and Malone, six in all, the New York Central system, therefore, maintains contact with the railway systems of Canada, including the lines within the Dominion over which it operates its trains, as follows:<sup>5</sup>

TABLE 9

*New York Central Mileages in Canada*

<i>Location</i>	<i>Miles of road owned and leased</i>	<i>Miles of road over which trackage rights are exercised</i>	<i>Total</i>
Niagara Frontier to Detroit River and branches (Canada Southern, including the Detroit River Tunnel)	380.83	0.37	381.20
St. Lawrence River to Ottawa (Ottawa and New York)	56.82	1.90	58.72
Malone-Huntingdon border crossing to Montreal (St. Lawrence & Adirondack)	46.57	14.12	60.69
Total	484.22	16.39	500.61

4. Historical data concerning the New York Central will be found in *The Beginnings of the New York Central Railroad*, by Frank W. Stevens; *The Story of the Rome, Watertown & Ogdensburg Railroad*, by Edward Hungerford; and Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

5. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. For official data for 1933, see p. 20, *supra*.

Through these gateways New York Central revenue and non-revenue approximate tonnage moved in the volume set forth below:<sup>6</sup>

TABLE 10

*New York Central Tonnages through Great Lakes Gateways  
in 1927 and 1934*

Gateways	1927			1934		
	East- or north-bound	West- or south-bound	Total	East- or north-bound	West- or south-bound	Total
Detroit Frontier	3,130,000	2,130,000	5,260,000	2,030,000	1,180,000	3,210,000
Niagara Frontier:						
Niagara Falls (Suspension Bridge)	2,290,000	1,540,000	3,830,000	1,160,000	810,000	1,970,000
Buffalo (Black Rock)	1,170,000	2,020,000	3,190,000	920,000	810,000	1,730,000
Total	3,460,000	3,560,000	7,020,000	2,080,000	1,620,000	3,700,000
Roosevelt town (Nyando)-Corn- wall	140,000	50,000	190,000	240,000	20,000	260,000
Malone-Huntingdon	940,000	520,000	1,460,000	150,000	170,000	320,000
Ogdensburg-Prescott	....	....	....	144,550	86,765	231,315
Grand total	7,670,000	6,260,000	13,930,000	4,644,550	3,076,765	7,721,315

In this it is interesting to note that the volume of eastbound traffic at the Niagara Frontier was approximately the same as that of the westbound in 1927 and some 25 per cent more in 1934; whereas at the Detroit Frontier it was 50 per cent more in 1927 and nearly twice the westbound in 1934. In total the eastbound tonnage crossing the border in each of the two years was not far apart at the two frontiers, but westbound more moved into Canada at the two Niagara River crossings than moved out at the Detroit River. At the other three gateways the aggregate movement into Canada also exceeded that into the United States.

As a whole the New York Central cross-border traffic fell off about 50 per cent from the high of 1927 to the low of 1934, very much as was the case at the Canadian National gateways in New England. The results of the depression are here startlingly apparent.

An idea of the character of the revenue-freight tonnages handled

6. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

by the railways controlled by the New York Central in Canada in 1933 may be gained from a glance at the subjoined table:<sup>7</sup>

TABLE 11

*New York Central Tonnages through Great Lakes Gateways in 1933*

<i>Name of railway</i>	<i>Originating on this road</i>	<i>Received from other roads in Canada</i>	<i>Received from foreign connections (U.S.)</i>	<i>Total</i>
Canada Southern (Mich. Cen.)				
Agricultural products	65,305	52,437	356,928	474,670
Animal products	45,741	6,973	330,821	383,535
Mine products	152,247	61,222	766,212	979,681
Forest products	3,530	47,109	58,787	109,426
Manufactures and miscellaneous	632,664	359,397	1,043,363	2,035,424
Total	899,487	527,138	2,556,111	3,982,736
Ottawa & New York				
Agricultural products	651	1,330	597	2,578
Animal products	990	....	....	990
Mine products	1,591	253	44,982	46,826
Forest products	777	835	392	2,004
Manufactures and miscellaneous	17,280	4,075	3,588	24,943
Total	21,289	6,493	49,559	77,341
St. Lawrence & Adirondack				
Agricultural products	3,467	6,259	1,589	11,315
Animal products	227	79	471	777
Mine products	1,061	3,471	88,208	92,740
Forest products	1,036	26,218	904	28,158
Manufactures and miscellaneous	9,994	81,488	11,222	102,704
Total	15,785	117,515	102,394	235,694

From this it will be seen that manufactures and miscellaneous shipments predominated by far on the Canada Southern and mine products on the Ottawa & New York, while the two commodities were nearly equal in volume on the St. Lawrence & Adirondack. In all but the latter the freight traffic received from United States carriers, mainly the New York Central, far exceeded that received from other roads in Canada.

In brief, the New York Central system has close relations with the railways of Canada by means of six gateways through which it pours a vast volume of traffic, totaling almost 14,000,000 tons in 1927 and over 7,700,000 tons in the off-year 1934, handled within the Domin-

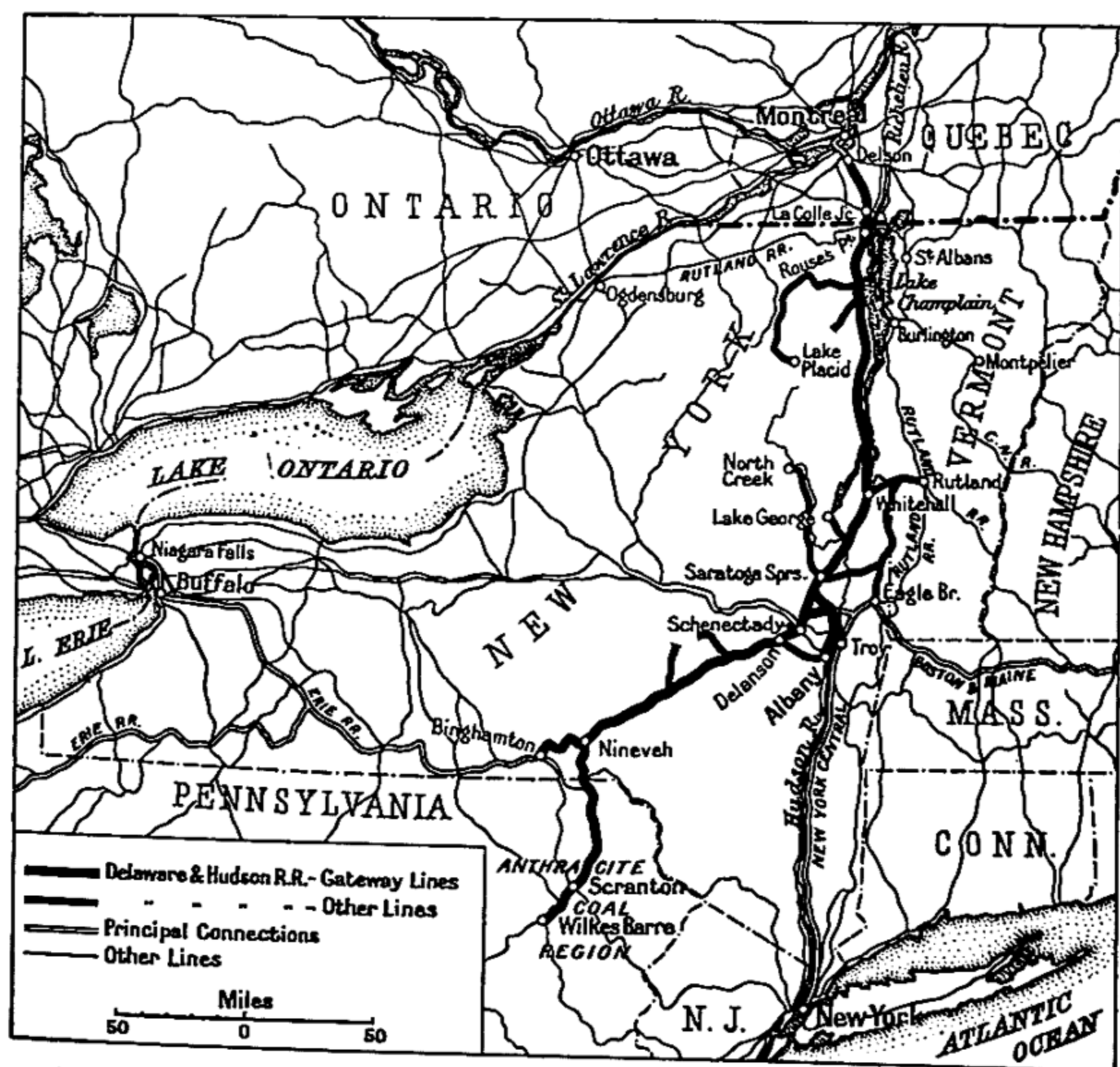
7. *Statistics of Steam Railways of Canada, 1933*, pp. 130-185, inclusive.



ion in large part over 501 miles of line over which it exercises control or the right to operate its trains.

### DELAWARE & HUDSON RAILROAD

The Delaware & Hudson Canal Company, now the Delaware & Hudson Railroad, was the first to experiment with the steam locomotive on the continent of North America, on August 8, 1829; and the first to create rail links, short though they were, in the through lines of communication between the United States and Canada in 1835-36. It is to be credited with the initial steps that were taken to unite the two countries with bonds of steel, even though forty years



*Delaware & Hudson Gateway between the State of New York and the Province of Quebec*

were to elapse before its railheads were connected other than by water.

It was in 1833 that the Saratoga & Schenectady Railroad was opened for its full length from the terminus of the Mohawk & Hudson Railroad at Schenectady to Ballston Spa and Saratoga Springs, then and since famous as health resorts and gathering places for those in search of rest and recreation. Two years later the Rensselaer & Saratoga Railroad was opened from Troy to a junction with the Saratoga & Schenectady Railroad at Ballston Spa, as a means of avoiding the troublesome inclined planes on the Mohawk & Hudson route, and as a more speedy and more comfortable way of continuing the journey from New York beyond the end of the steamboat service at the head of navigation in the Hudson River. From Saratoga Springs to the head of Lake Champlain stagecoaches continued in use for thirteen years, until in 1848 the rail line under the name of the Saratoga & Washington Railroad was extended to Whitehall and the career of packet boats and stagecoaches brought to a close between the Hudson River and Lake Champlain. In 1849 the several railroads between the Hudson River at Troy and the head of Lake Champlain at Whitehall were brought under the control of interests owning steamboat lines on the Hudson River and Lake Champlain, whereupon a through line was established between New York and Montreal via the Champlain & St. Lawrence Railroad, known as the "North & South Through Line," on which passengers for the first time were enabled to buy tickets and check their baggage direct between New York and Montreal. In 1851 the exaction of canal tolls in addition to the regular freight tariffs, required by law, was discontinued by an act of legislature as in the case of the New York Central, and in the same year the road was extended to the water's edge of Lake Champlain and direct connection there made with the steamboat line to St. Johns, Quebec, from whence the journey was continued by rail to the St. Lawrence opposite Montreal. At this time, or a few months before, the Rutland & Whitehall Railroad was opened to a junction at Castleton, Vermont, with a short road connecting with the Rutland & Burlington Railroad leading to a junction at Burlington with the Vermont Central Railroad over which through rail service between Montreal and Boston was established in that year. Shortly after this, in 1852, the

Plattsburg & Montreal Railroad was opened from Plattsburg, New York, to the border near Mooers Junction, New York, on the line of the Northern (Ogdensburg) Railroad. Beyond this, access to Montreal was had over the Montreal & New York Railroad, made up of the Lake St. Louis & Province Line and Montreal and Lachine railroads, opened in 1852 and 1847, respectively, and since abandoned in so far as the Mooers Junction gateway is concerned.<sup>8</sup> Again there was a pause until in 1875, twenty-three years later, the rail gap was closed between Whitehall and Plattsburg and one year later the gap extending from Canada Junction on the aforesaid line to Rouses Point, through the building of the New York & Canada Railroad along the western shore of Lake Champlain. By these means through train service was brought about over a succession of lines all the way from New York to Montreal, of which the Canadian link was the former Champlain & St. Lawrence Railroad, which had then become a part of the Grand Trunk. The running of the first train from Albany to Montreal over this route in November, 1875, was made the occasion for rejoicing by leading citizens from both sides of the border, 266 years after Champlain's voyage of discovery in 1609, and 40 years after the first step had been taken in the building of this line of rail communication between the United States and Canada.

Then the situation remained unchanged for 32 years until in 1907 the Delaware & Hudson acquired the Napierville Junction Railway, 27.2 miles long, from the border 1.1 miles north of Rouses Point, to its connection later made with the Canadian Pacific at Delson Junction in 1917, over which it obtained running rights for 14.5 miles to Montreal, the total distance operated in Canada thus becoming 41.7 miles. In the year 1906 the control of the Quebec, Montreal & Southern Railway in Quebec had been secured, extending from St. Lambert, opposite Montreal, to Pierreville on the St.

8. In 1857 the Champlain & St. Lawrence Railroad from its connection with the Vermont Central at Rouses Point to Montreal, and its fierce rival the Montreal & New York Railroad from its connection with the Plattsburg & Montreal Railroad at Mooers Junction to its terminus at Montreal, were amalgamated under the name of the Montreal & Champlain Railroad, and leased by the Grand Trunk Railway in 1863-64 (*Bulletin No. 39, The Railway and Locomotive Historical Society, March, 1936*).



Lawrence, with a branch to Noyan Junction near the border at Rouses Point. Subsequently, it was extended to Fortierville, Quebec, and in 1929 was sold to the Canadian National Railways. It should be mentioned that in 1869, six years prior to the establishing of the all-rail service between the waters of the Hudson River and the St. Lawrence, a line had been completed between Schenectady and Albany and Binghamton, New York, on the Erie Railroad, whereby additional connections were gained with the West and an outlet furnished for the anthracite and bituminous coals of Pennsylvania to the Canadian market. The original 6' gauge on this line was changed to 4' 8½" in 1876, thus putting Montreal in direct rail communication with one of its principal sources of fuel, without the further use of a third rail or a break of bulk on this route which until then had been necessary.

At the present time these lines forming the Delaware & Hudson Railroad afford the shortest rail route between Montreal on the north and New York and the coal regions of Pennsylvania on the south. Through its border gateway at Rouses Point the tonnage and character of its revenue-freight interchanges with its Napierville Junction line in 1933 were as follows:<sup>9</sup>

TABLE 12

*Delaware and Hudson Tonnages through Rouses Point  
Gateway in 1933*

<i>Commodities</i>	<i>Originating on N.J. Ry.</i>	<i>Received from other roads in Canada</i>	<i>Received from foreign con- nections (U.S.)</i>	<i>Total freight tonnage</i>
Agricultural products	157	7,735	5,597	13,489
Animal products	10	649	118	777
Mine products	46	2,045	220,592	222,683
Forest products	..	84,354	862	85,216
Manufactures and miscellaneous	43	104,882	44,916	149,841
Total	256	199,665	272,085	472,006

It thus appears that the northbound movement into Canada, principally coal, was in excess of the southbound movement, of which the greater proportion was manufactures and miscellaneous, including newsprint and woodpulp, followed closely by forest products con-

9. *Statistics of Steam Railways of Canada, 1933*, pp. 130-185, inclusive.

sisting largely of pulpwood. Occupying the historic course over which the people on both sides of the border have intermingled for more than three hundred years, the Delaware & Hudson Railroad in this exchange of traffic has the distinction of rounding out an even century since its forerunner, the Troy & Saratoga Railroad, was opened to public service in 1835.<sup>10</sup>

#### BALTIMORE & OHIO RAILROAD

Earliest among the railroads of the continent to serve the public in general—albeit by horses and sails as the motive power in 1830—the Baltimore & Ohio was late in reaching the Great Lakes basin. It was 1874 before it entered Chicago with its own rails, there to compete among others with Canadian rail carriers for the traffic of the American West. In time it touched the southern shores of Lake Erie, at points like Fairport and Toledo, from which by steamboat it came in contact indirectly with the Canadian side of the border. Finally, in 1930, through its purchase of the Buffalo, Rochester & Pittsburgh Railroad, it came into the control of the cross-border movement of traffic by car ferry, established in 1907, between Genesee Dock in Charlotte, New York, the port of Rochester, New York, and the Canadian National Railways at Cobourg on the north shore of Lake Ontario. At Buffalo, too, interchanges with the Canadian Pacific Railway were secured through the same purchase in 1930, the Buffalo, Rochester & Pittsburgh having been built into that city and trackage to connections obtained in 1883. By these means the Canadian railways have interrelations with a great system in the United States, extending from Kansas City, St. Louis, and Chicago on the west, to New York, Philadelphia, and Baltimore on the east. Its volume of freight traffic through the Lake Ontario and Buffalo gateways in recent years, expressed in tons, was approximately as shown in Table 13.<sup>11</sup>

Northbound traffic, principally coal, was, therefore, in excess of the movement in the other direction at the Lake Ontario gateway, while the reverse was true at the Buffalo gateway where southbound

10. For data respecting the Delaware and Hudson Company, see its history issued in 1925.

11. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

manufactures and miscellaneous from Canada were the greatest. Incidentally, it should be said that the Lake Ontario gateway has been used to a considerable extent by travelers, over 22,000 round-trip passages having been sold in 1934. At both gateways the recovery of business was quite marked, in that the tonnage handled in 1934 was some 50 per cent greater than in the preceding year.

TABLE 13

*Baltimore & Ohio Tonnages through Great Lakes Gateways  
in 1933 and 1934*

	<i>Northbound</i>		<i>Southbound</i>		<i>Total</i>	
	<i>1933</i>	<i>1934</i>	<i>1933</i>	<i>1934</i>	<i>1933</i>	<i>1934</i>
Lake Ontario gateway						
Agricultural products	35	18	..	..	35	18
Animal products	17	5	89	..	106	5
Mine products	157,967	229,656	3,344	9,427	161,311	239,083
Forest products	110	..	5,671	21,184	5,781	21,184
Manufactures and miscellaneous	3,118	3,498	7,416	5,809	10,534	9,307
Less than carload	204	185	32	70	236	255
Total	161,451	233,362	16,552	36,490	178,003	269,852
Buffalo gateway						
Agricultural products	..	20	273	126	273	146
Animal products	..	..	520	45	520	45
Mine products	79	..	198	434	277	434
Forest products	..	..	272	1,329	272	1,329
Manufactures and miscellaneous	1,433	27	3,183	6,734	4,616	6,761
Less than carload	166	40	88	120	254	160
Total	1,678	87	4,534	8,788	6,212	8,875

## ERIE RAILROAD

Although chartered in the early 1830's and its construction started in 1835, the Erie Railroad was not completed westward from the Hudson River until sixteen years later when in 1851 it reached Dunkirk with its 6' 0" gauge line, and then Chicago by means of traffic agreements with what in time became the Lake Shore & Michigan Southern Railway. It was not until 1887 that it secured control of its own line to Chicago, but meantime it had acquired a route to Cincinnati and St. Louis, in 1865, and the use of tracks on which a third rail for its wide equipment had been laid into Chicago in 1868. It had also built into Buffalo in 1863, to the International Bridge at Black Rock in 1874, and to Suspension Bridge at Niagara Falls in



1871. It was, therefore, an active competitor with Canadian rail carriers and other American lines, for St. Louis, Cincinnati, and Chicago traffic to and from the Atlantic ports, and a solicitor of Canadian traffic at the Buffalo and Suspension Bridge gateways. Its wide gauge was a severe handicap, to overcome which in part it laid a third rail for the use of the standard-gauge equipment of connecting lines until it made a change to the 4' 8½" gauge in the East in 1876 and in the West in 1880.<sup>12</sup>

The Erie Railroad, under its various names, has thus been an important factor in the railway interrelations of the two countries, either in direct contact at the Niagara Frontier gateways, or by reason of its sharp competition for traffic tapped at common points in the West or by traffic arrangements such as the one which enables the products on its lines to reach Montreal and Boston, via the Delaware & Hudson connection at Binghamton.

An idea of the importance of its gateways will be gained from an inspection of the subjoined table of the approximate number of tons of revenue and non-revenue freight interchanged at the Niagara Frontier with Canadian carriers in 1932.<sup>13</sup>

TABLE 14

*Erie Railroad Tonnages through Great Lakes Gateways in 1932*

	<i>Pere Marquette</i>	<i>Wabash</i>	<i>Michigan Central</i>	<i>Canadian National</i>	<i>Total</i>
Buffalo (Black Rock)					
From Canada	65,240	105,278	41,656	105,860	317,534
To Canada	16,412	25,244	69,646	187,115	298,417
	<u>81,652</u>	<u>130,522</u>	<u>111,302</u>	<u>292,475</u>	<u>615,951</u>
Niagara Falls (Suspension Bridge)					
From Canada	192,463	48,828	191,868	150,704	583,863
To Canada	78,538	4,037	42,537	166,051	291,163
	<u>271,001</u>	<u>52,865</u>	<u>234,405</u>	<u>316,755</u>	<u>875,026</u>
Total					
From Canada	257,703	154,106	233,524	256,064	901,397
To Canada	94,950	29,281	112,183	353,166	589,580
Grand total	<u>352,653</u>	<u>183,387</u>	<u>345,707</u>	<u>609,230</u>	<u>1,490,977</u>

12. Information bearing on the history of the Erie Railroad is contained in *Between the Ocean and the Lakes*, by Edward H. Mott.

13. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

In this it is interesting to note how substantial were the Erie Railroad movements through the Niagara Frontier gateways, of which 40 per cent were to and from the Canadian National, and likewise to observe the extent to which the shipments from Canada exceeded those in the reverse direction.

### LEHIGH VALLEY RAILROAD

Among the roads which connect the Niagara Frontier with New York and Philadelphia, and with the hard-coal regions of Pennsylvania, is the Lehigh Valley Railroad which had entry to Buffalo over the Erie Railroad until it built to that city in the early 1880's. In 1896 it extended its line to a connection with the New York Central at Tonawanda Junction beyond which it moves its trains over the rails of that company to the Suspension Bridge gateway. There its interchanges in three selected years, in tons, were approximately as follows:<sup>14</sup>

TABLE 15

#### *Lehigh Valley Tonnages through Suspension Bridge Gateway in 1927, 1929, and 1932*

<i>Year</i>	<i>Commodity</i>	<i>From Canada</i>	<i>To Canada</i>	<i>Total</i>
1927	Merchandise	1,868,115	714,517	2,582,632
	Coal	.....	679,868	679,868
	Total	1,868,115	1,394,385	3,262,500
1929	Merchandise	1,990,543	876,836	2,867,379
	Coal	.....	845,458	845,458
	Total	1,990,543	1,722,294	3,712,837
1932	Merchandise	970,558	297,714	1,268,272
	Coal	.....	418,856	418,856
	Total	970,558	716,570	1,687,128

Shipments as a whole, it will be observed, were greater from Canada to the United States than in the other direction and this was particularly so in the case of merchandise. It was due to the move-

14. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

ment of coal into Canada that the traffic was more evenly balanced between the two countries. The pronounced drop of more than 50 per cent in tonnage between 1929 and 1932, due to the depression, was in accord with what was happening at nearly all of the border crossings.

#### DELAWARE, LACKAWANNA & WESTERN RAILROAD

Like the Lehigh Valley Railroad, this is a hard-coal road which connects the port of New York with the Niagara Frontier. Its extension to Buffalo was opened in 1882, at which time it made a connection with Canadian carriers at the Black Rock gateway. Long before this time it had reached the shores of Lake Ontario at Oswego, where contact was made in 1848 with independent water carriers on the Great Lakes.

Information is unavailable as to all of the cross-border freight movements of this carrier at Black Rock, but those made in conjunction with the Canadian National Railways at that gateway are set forth in the subjoined table of approximate tonnages for the year 1934:<sup>15</sup>

TABLE 16

#### *Delaware, Lackawanna & Western Tonnages through Buffalo Gateway in 1934*

	<i>From Canada</i>	<i>To Canada</i>	<i>Total</i>
Agricultural products	8,771	4,074	12,845
Animal products	1,416	115	1,531
Mine products	3,510	332,286	335,796
Forest products	2,564	1,171	3,735
Manufactures and miscellaneous	25,532	15,940	41,472
Total	41,793	353,586	395,379

Coal into Canada was the principal commodity thus moved in that year, of which the anthracite variety was the leading factor. To this, of course, should be added the unknown tonnages interchanged at the border with the Michigan Central, Pere Marquette, and Wabash railways.

15. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.



## PENNSYLVANIA RAILROAD

Another American rail contact with Canadian carriers at the Black Rock Gateway is that of the Pennsylvania Railroad through its control of the Western New York & Pennsylvania Railway constructed into Buffalo, New York, in the early 1880's. By means of its own power and crews, since 1913, it traverses the International Bridge to Fort Erie, Ontario, and there interchanges cars with the Canadian National, Michigan Central, and Wabash railways, and in so doing exercises trackage rights for a distance of  $2\frac{1}{2}$  miles beyond the border. Contact, too, is made with the Canadian Pacific Railway by means of a car ferry across Lake Erie between the ports of Ashtabula, Ohio, and Port Burwell, Ontario.

In the year 1932 the interchanges of revenue and non-revenue tonnages were as follows:<sup>16</sup>

TABLE 17

*Pennsylvania Railroad Tonnages through Great Lakes Gateways in 1932*

	<i>Buffalo (Black Rock)</i>			<i>Ashtabula-Port Burwell*</i>		
	<i>From Canada</i>	<i>To Canada</i>	<i>Total</i>	<i>From Canada</i>	<i>To Canada</i>	<i>Total</i>
Agricultural products	11,096	12,153	23,249	.....	.....	.....
Animal products	1,267	.....	1,267	.....	.....	.....
Mine products	.....	663,598	663,598	.....	241,519†	241,519
Forest products	60,949	5,495	66,444	.....	.....	.....
Manufactures and miscellaneous	29,934	54,116	84,050	489	.....	489
Total	103,246	735,362	838,608	489	241,519	242,008

\* Classifications approximate.

† Mostly Canadian Pacific Railway fuel coal.

As with the other American rail carriers at the Niagara Frontier, coal is the principal commodity entering Canada from this part of the United States. The falling off in the total movement in both directions during the depression has been fully as great as with the railroads in general, its drop from 1930 to 1934 having been in excess of 50 per cent.

16. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

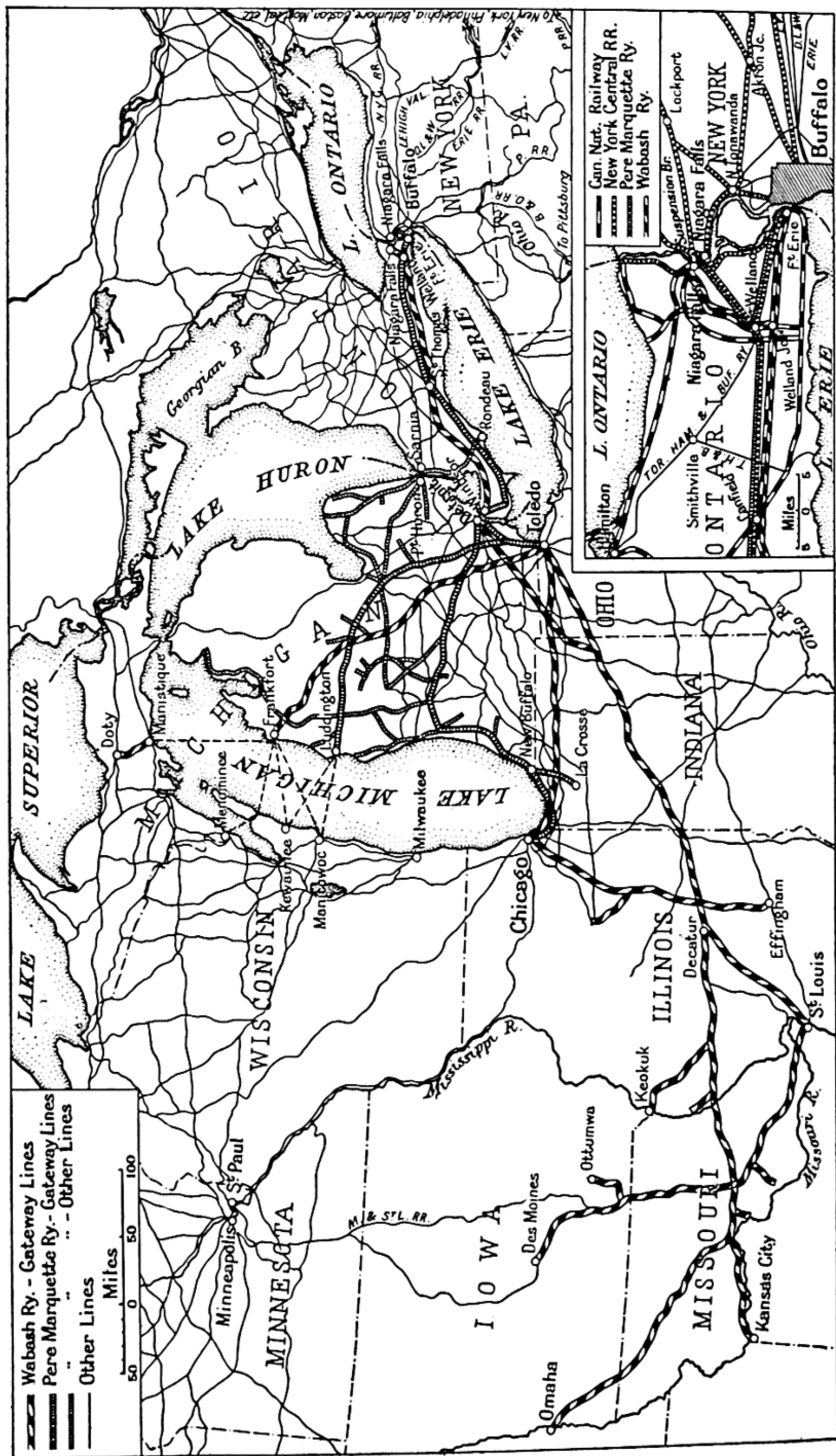
## WABASH RAILWAY

The first of the railroads to come to life in the American West was the Northern Cross Railroad which was chartered in 1837 to build across the State of Illinois from Quincy on the Mississippi to the Indiana line. In time this became incorporated in the through route between Kansas City, Missouri, and Detroit, Michigan, known as the Wabash Railway, which in 1898 was extended by car ferry to Windsor, Ontario, and thence across the peninsula of Ontario to Buffalo (Black Rock) and Niagara Falls (Suspension Bridge) by means of trackage rights over the Grand Trunk Railway. The distance so spanned in Canada from Windsor to Fort Erie is 225.3 miles, in addition to which there is the 18.3-mile line from Welland Junction to Niagara Falls, a total of 243.6 miles.<sup>17</sup>

The approximate number of tons handled by the Wabash through the three gateways in 1933 and 1934 was as shown in Table 18.<sup>17</sup> From this it is apparent that Wabash tonnages moved unchanged in their volume and make-up across the peninsula of Ontario.<sup>18</sup> That which crossed at Detroit was divided between the Niagara Frontier gateways in fairly equal proportions, the one at Buffalo passing somewhat more than the other. Manufactures and miscellaneous items accounted for the bulk of the shipments, of which the west-bound were the greater. The Wabash indeed profits from Canadian hospitality in thus having an opportunity of bringing the East and West together at the Niagara Frontier.

17. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. For official mileage data for 1933, see p. 20, *supra*.

18. The figures furnished by the carrier and given in Table 18, *infra*, indicate that the Wabash traffic was altogether of a pass-over or through character, known in railroad parlance as "overhead traffic." In fact, however, the figures given in *Statistics of Steam Railways of Canada, 1933*, show that a small percentage of the total traffic, 80,821 tons, or say 5 per cent in that year, in reality was received by the Wabash along its line and from other roads in Canada. Without prohibitive expense in the analyzing of its way-bills and interline accounts, the carrier is unable to determine the course and nature of the small fraction thus crossing the border but once, and in consequence treats the entire movement as crossing both frontiers. Rather than leave the record blank, the carrier's figures have been accepted as the best that are obtainable under the circumstances. In light of the purpose for which the figures are assembled, the error is inconsequential.



*Wabash and Pere Marquette Gateways between the Western, Middle, and Eastern States and the Province of Ontario*







taling 198.6 miles, and the lines over which it exercises trackage rights 137.6 miles, or 336.2 miles in all.<sup>19</sup> In 1930 the use of the 16.9-mile Michigan Central line from Welland to Bridgeburg, Ontario, and thence for 0.4 of a mile on the International Bridge was discontinued, although still reported as available if and when required. In 1932 the routing of freight through its Port Huron-Sarnia gateway also was brought to an end. In the latter year it also discontinued the use of the car ferry across Lake Erie between Port Stanley and Erieau, Ontario, and Conneaut, Ohio, although it continues to operate a steamship connection between Erieau and Conneaut, and other Ohio points, over which a substantial tonnage of coal and mineral products—601,545 tons in 1934—is taken across Lake Erie for delivery over its rails to the Canadian market.

The approximate number of tons of freight handled by the Pere Marquette across the Niagara Frontier, and likewise in volume across the Detroit-St. Clair Frontier, were as follows for the years named:<sup>20</sup>

TABLE 19

*Pere Marquette Tonnages through Each of Its Great Lakes Frontiers in 1929, 1933, and 1934*

<i>Year</i>	<i>Commodity</i>	<i>Eastbound</i>	<i>Westbound</i>	<i>Total</i>
1929	Agricultural products	312,906	....	312,906
	Mine and animal products	53,085	295,740	348,825
	Manufactures and miscellaneous	1,128,535	677,898	1,806,433
	Total	1,494,526	973,638	2,468,164
1933	Agricultural products	313,638	....	313,638
	Mine and animal products	480,604	117,660	598,264
	Manufactures and miscellaneous	574,119	356,218	930,337
	Total	1,368,361	473,878	1,842,239
1934	Agricultural products	328,202	....	328,202
	Mine and animal products	511,259	132,288	643,547
	Manufactures and miscellaneous	721,352	410,429	1,131,781
	Total	1,560,813	542,717	2,103,530

19. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. For official data for 1933, see p. 20, *supra*.

20. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

A noticeable feature of this is the regularity of the major east-bound movement which in total, so unlike that of the other cross-peninsula roads, shows no substantial diminution during the depression. It was in the lighter westbound flow that traffic fell off, although as a whole the business of the Pere Marquette held up surprisingly well.



## CHAPTER V

### GREAT LAKES GATEWAYS (*Continued*)

THE desire for closer trade relations, as pointed out in the preceding chapter, is what brought together the people of Lower Canada and New England by means of connecting railways in the early 1850's. Montreal and the Eastern Townships thus secured outlets to ice-free ports and were put in a position to supply a large consuming population on the south; Boston and Portland and their hinterland in return were freed from sole reliance on their New York rival's Erie Canal for access to the American West.

This, however, did not fully satisfy the provinces which had long striven, without success, for a connecting railway which would link them together in a political as well as a commercial sense. The outcome was the adoption of a national policy involving government aid—first by the Union of Lower and Upper Canada and later by the Confederation in 1867—which ever after guided the expansion of their railways. Profitless lines through barren territory were to be built when necessary to serve a political purpose; profitable ones where possible through fruitful territory to act as leaven to the mass.

It was in furtherance of this policy that remunerative traffic was sought by the Canadian railway systems in the neighboring land, through the gateways in the border extending from Lake Champlain to Sault Ste Marie.

#### CANADIAN NATIONAL RAILWAYS

Following the failure of the attempts of the British Government and of the Maritime Provinces and Lower Canada, in the 1840's, to bring about the construction of an intercolonial railway from Halifax, Nova Scotia, and Saint John, New Brunswick, to the city of Quebec, and likewise the failure in respect of an international railway between Saint John, New Brunswick, and Portland, Maine, the minds of Canadians turned to a plan for joining Lower and Upper Canada by rail, and out of this the Grand Trunk Railway, now a part of the Canadian National Railways system, was born in 1852. Actual construction started in 1853, largely through the initiative











of Joseph Howe, Francis Hincks, and George Cartier. Its prospectus, issued in the latter year, announced its intent to bring into being a route 809 miles long from Portland, Maine, through Montreal and Toronto to Sarnia, Ontario, on the St. Clair River outlet to Lake Huron. At Sarnia connections were to be made with American lines then under construction to the great West as far as the Mississippi, and to the copper and iron districts of Michigan. In the other direction a branch was to be built from what is now Richmond near Melbourne, Quebec, on the Montreal-Portland line to the city of Quebec, and thence to Trois Pistoles where it was intended that a junction should be made with the intercolonial route ultimately to be built from Halifax.

In conformity with this plan the Portland line, opened in 1853, was acquired in that year, as were others then in existence or proposed, so that the road was in operation from Portland and Quebec to Montreal by 1854, thence through Prescott, Ontario, to Brockville, Ontario, by 1855, thence to Toronto by 1856 and to Sarnia by 1858-59. In the year 1860 the Victoria Bridge over the St. Lawrence at Montreal was formally opened to regular service, the eastern end of the railway was extended to Rivière du Loup, and the "Chicago, Detroit & Grand Trunk Railway" from Port Huron, Michigan, to Detroit was made a part of the system. Beyond the Detroit-St. Clair frontier the West was reached by means of traffic arrangements with American railroads and water lines on the Great Lakes. By 1881 the system was in possession of its own rails across the states of Michigan, Indiana, and Illinois to the city of Chicago. Through its Sarnia-Port Huron gateway access was thus gained to America's great Middle West, a gateway at which the original car ferry across the St. Clair River was replaced by a tunnel in 1891.

Along this backbone, as time went on, contacts were made with various border gateways, very much as was the case with the New York Central's corresponding backbone on the other side of the border. This system's four gateways to New England have already been described. Through one of them—at Rouses Point—it will be recalled that communication by rail was first established between Canada and the United States in 1851, the line on the Canadian side of the border, the Champlain & St. Lawrence Railroad, having been leased by the Grand Trunk in 1863-64. The same gateway has been



used since 1876 by what is now the Delaware & Hudson Railroad, after its connection through Mooers Junction with the Montreal & Champlain, previously the Montreal & New York Railroad, had been abandoned. It should be added that the part of this old route lying between Montreal and Lachine, eight miles in length, was built in 1847 as a substitute for the journey by stage around Lachine Rapids. From Caughnawaga, on the south side of the St. Lawrence, the road to Mooers Junction, known as the Lake St. Louis & Province Line, was built in 1852 to connect with railroads in the United States, the two links in the route having been joined at the river by a car ferry which is said to have been more convenient for passengers than the means provided by its rival and ultimate owner, the Champlain & St. Lawrence, terminating farther downstream at Laprairie. The abandonment of the Mooers Junction entrance to the United States left the Rouses Point gateway as the one point of connection between the railways of the two countries at or near the western shore of Lake Champlain.

However, in 1883, the Montreal & Champlain Junction Railway, taken over by the Grand Trunk in the same year, was opened from Brosseau Junction near Montreal to the border at Fort Covington, New York, there connecting with the similarly controlled Massena Springs & Fort Covington Railroad which in 1886 met an extension of the Rome, Watertown & Ogdensburg Railroad, now a part of the New York Central, at its terminus at Massena Springs. Through the Fort Covington gateway the present Canadian National Railways in this manner have access to 22.2 miles of leased line and 0.1 mile over which they have trackage rights, a total of 22.3 miles of operated line bearing the name of the United States & Canada Railroad.

At Prescott, Ontario, the line owned by American interests between the terminus of the Vermont Central route at Ogdensburg, New York, and Ottawa, Ontario, was intersected by the Grand Trunk in 1855, but this gateway finally came under the sway of the Canadian Pacific when in 1884 it acquired control of the Ottawa line, known as the Ottawa & Prescott or St. Lawrence & Ottawa Railway.

A gateway of great importance for many years was the one at Kingston where contact in 1856 was made by steamboat with the

Watertown & Rome, which had been built into Cape Vincent, New York, in 1852. This has long since ceased to be used for freight interchange between the two countries.

At Cobourg, Ontario, the car-ferry connection with the Buffalo, Rochester & Pittsburgh Railroad, now a part of the Baltimore & Ohio Railroad, was effected in 1907, as has been explained in the preceding chapter.

Though not now used as a joint through route, mention should be made here of the Northern Railway of Canada, opened from Toronto to Collingwood on Georgian Bay in 1854-55 under the name of the Toronto, Simcoe & Huron Railway, then the Ontario, Simcoe & Huron Railway, and amalgamated in 1888 with the Grand Trunk, which had reached Toronto in 1856. As a portage route it was intended to serve as a link in a short rail-and-water chain of communication between New York and Boston and the West via Oswego and Toronto. It is expressive of the extent to which the international boundary was ignored by both countries in the search for preferable ways of joining the eastern states with the region bordering the waters of the Upper Lakes.<sup>1</sup>

It was through its acquisition of the Great Western Railway of Canada in 1882 that the Grand Trunk gained direct access over Canadian soil to its two gateways on the Niagara Frontier and the one at the Detroit River, although several years before it had taken over the Buffalo & Lake Huron Railroad opened at the instance of American interests from Fort Erie, opposite Buffalo, to Goderich, Ontario, on Lake Huron as early as 1858. Ever since the Grand Trunk in the 1850's had entered the territory which the Great Western until then had considered its own, and had followed this by an extension of its line via Sarnia and Port Huron to Detroit in 1860, the rivalry between the two companies had been bitter. It will be recalled that the Great Western had been active in the building of lines in the Ontario Peninsula about the same time that the Grand Trunk was engaged in the construction of its route from Montreal to Toronto.<sup>2</sup> Hamilton and Windsor had been connected in 1854 by the Great Western, and a year later Toronto had been reached and a connection had been made with the New York Central by means of a suspension bridge across the Niagara Gorge. Two routes over the

1. See footnote, p. 40, *supra*.

2. See p. 81, *supra*.

soil of both countries by that time were competing for traffic between the West and East—the Great Western in conjunction with the New York Central and Michigan Central, and the Grand Trunk in collaboration with the Vermont Central and connections in Michigan and on the Great Lakes. The Great Western also made contact at Hamilton with fleets of steamers to rail termini on the American shore at Oswego, Cape Vincent, and Ogdensburg, and in the other direction with boat lines to points on the Upper Lakes including one from the western end of the Detroit & Milwaukee Railroad over which it had acquired control after its Sarnia extension had been completed in 1858. Another element in the Great Western situation was its acquisition of the London & Port Stanley Railway opened in 1856 as a “main artery of trade between Canada and the United States across the lake,” but destined to serve only for excursion and coal traffic, and operated as a means of connection between various carriers since 1915 by the London (Ont.) Railway Commission.<sup>3</sup> In the same year that the International Bridge was opened at the Buffalo gateway, 1873, the Great Western’s “air line” was opened, between its eastern end at Fort Erie and Glencoe on its Toronto-Windsor line, to meet the competition of the Canada Southern Railway also opened in that year as explained in the preceding chapter. It is over this “air line” that the Wabash now has trackage rights to the Niagara Frontier.

By 1883, then, the Grand Trunk had absorbed its active competitor in the peninsula of Ontario, and had secured a continuous route from Quebec to Chicago, with access to rail lines in the United States at five gateways in the Great Lakes Region west of Rouses Point, namely, Fort Covington, Niagara Falls (Suspension Bridge), Buffalo (Black Rock), Windsor-Detroit and Sarnia-Port Huron. The car-ferry crossing of Lake Ontario between Cobourg and Charlotte (Genesee Dock) did not come into being until later, as was the case with the steamship link between Depot Harbor, Ontario, and Milwaukee and Chicago which was incorporated as the Canada Atlantic Transit Company in 1899 and worked in unison with the Canada Atlantic Railway acquired by the Grand Trunk in 1905. At its east-

3. Through Port Stanley interchanges of traffic are made with United States points by means of water carriers.



ern end it had sold its extension from Quebec to Rivière du Loup in 1879 to the Dominion Government which had incorporated it in the Intercolonial Railway opened through in 1876. At its western end it came into possession of a large group of lines in Michigan as well as in the states of Indiana and Illinois which, with later additions, are now incorporated in its Grand Trunk Western Railroad extending from Port Huron to Chicago, Illinois, from Fort Gratiot, Michigan, to Detroit, and from Detroit to Grand Haven and Muskegon, Michigan, aggregating 965.7 miles of owned and leased lines and 40.9 miles over which trackage rights are exercised, a total of 1006.6 miles operated by or in the interest of the present Canadian National Railways. In addition to this they own or lease 0.1 mile and possess 0.2 mile of trackage rights at Suspension Bridge, New York, a total of 0.3 mile. Also they control the International Bridge with 0.6 mile of road in New York State, and the St. Clair Tunnel with 1.0 mile of line in the state of Michigan. Their total holdings in the Great Lakes Region of the United States, including the 22.3-mile line to Massena Springs, therefore, aggregate 989.6 miles of owned and leased lines and 41.2 miles of trackage rights, making in all 1030.8 miles.<sup>4</sup> In this is not included the Grand Trunk's half interest in the Detroit & Toledo Shore Line Railroad over which it makes contact with American soft-coal carriers at Toledo, nor its holdings in terminal companies at Toledo, Chicago, and elsewhere in the United States.

This mileage might have been greater had the Grand Trunk had its way when, in 1876, its president expressed a willingness to extend the system to the Canadian Northwest, if permitted by its home country to do so on American territory from Detroit through Chicago to the province of Manitoba. His proposition, conditioned on the omission of a proposed line through the wilderness north of Lake Superior, was rejected by the Canadian Government which saw the need of an all-Canadian route that in a political sense would bind the provinces together as one nation. At that time it was evident that the Grand Trunk had no aspirations to serve the West, except as was made possible through its connections made in 1881 at Chicago

4. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. For official data for 1933, see p. 20, *supra*.

with American lines reaching in a host of directions to the Ohio and Mississippi and beyond. With traffic assured from those sources on the United States side of the border, and from the peninsula of Ontario in which it held a practical monopoly after its absorption of the Great Western in 1882, the Grand Trunk was in no mood further to burden its finances with what promised to be a profitless extension. Curiously enough, a quarter of a century later, this position was reversed. The threatened loss of all tributary traffic from the Canadian Northwest, developed there by the Canadian Pacific and Canadian Northern Railways in the previous decade, and its disinclination to agree with the latter company in respect of reciprocal traffic, awakened the Grand Trunk to the danger of its position in 1902. And so it then made its offer to the Canadian Government to build from its terminus at North Bay, Ontario, to the Pacific coast, to handle the expanding business of the Canadian Northwest which otherwise, it was claimed, would be diverted to American lines. Independent of its neighbor, Canada thus was to be given a second transcontinental line paralleling the Canadian Pacific through the wilderness north of Lakes Superior and Huron, and avoiding the course through Chicago which had been put forward by the Grand Trunk in 1876. The Government looked with favor on the proposal in so far as the line west of Winnipeg was concerned; but frowned on a location in the East that would have had for its outlets the port of Portland on foreign soil and the Intercolonial Railway, deemed to be too circuitous for transcontinental traffic. The outcome of this was the opening of the Grand Trunk Pacific Railway westward from Winnipeg to Prince Rupert on the Pacific coast in 1914, and of the "Eastern Division of the National Transcontinental Railway" eastward from Winnipeg to Moncton, New Brunswick, in 1915. Coincidentally, a third transcontinental line, the Canadian Northern Railway, was opened from coast to coast in 1915. In the consolidation of these systems which followed in 1920, under the name of the Canadian National Railways, no additional gateways to the United States were provided within the Great Lakes Region; but through the Fort Frances-Ranier gateway in the Northwestern Region, the American city of Duluth, Minnesota, is reached by a leased line of the Canadian Northern Railway—the Duluth, Winnipeg & Pacific Railway, of which the details will be given in the succeeding chapter.

Between Duluth and Chicago traffic to and from the latter branch preferentially is handled by the Chicago & Northwestern Railroad, or by other American carriers, thus in effect giving the Canadian National Railways a transcontinental routing through the United States via Chicago and the Detroit-St. Clair frontier gateways, which with their Canadian Northern and Grand Trunk lines north of Lake Superior make three courses open to Canadians over their government system of railways through the basin of the Great Lakes.

The approximate volume of Canadian National Railways total traffic passed through its seven gateways in the Great Lakes Region in the years 1929 to 1934, inclusive, is set forth in Table 20.<sup>5</sup>

This showing is noteworthy for the astonishing magnitude of the cross-border movement; the excess of Canadian imports as a whole over exports to the extent of from 65 to 100 per cent; the pronounced dropping off in tonnage from 1929 to 1932-33, in excess of 50 per cent, followed by a slight recovery; and the great variety of commodities thus exchanged by the two countries through the agency of the Canadian National system of government controlled railways on both sides of the border aggregating in extent nearly 24,000 miles.

A word here should be added in explanation of the gauge situation which, as mentioned in Chapter III, proved to be most troublesome to the Canadian carriers until the early 1870's. The 5' 6" gauge, sometimes referred to as the broad or provincial gauge and again as Poor's gauge, was required on all the Canadian lines in the early days, with the exception of the first of them, the Champlain & St. Lawrence Railroad and a few others connecting directly with American roads. Instead of insuring the movement of traffic through Canada to Montreal, as was originally the intent, the result of this policy was quite the reverse. The delay and expense of transshipping the contents of cars at points of meeting with standard-gauge roads, or there shifting car bodies from one kind of truck to another, or adjusting wheels on their axles, militated most seriously against the Canadian routes in their competition with roads on the other side of the border for traffic to and from the American West. The Great Western got around this by laying a third rail between the Niagara

5. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.



TABLE 20

## Canadian National Tonnages through Great Lakes Gateways, 1929 to 1934

	St. Agnes, Que.- Fort Covington, N.Y. (N.Y.C.)		Cobourg, Ont.- Charlotte, N.Y. (B. & O.)		Niagara Falls, Ont.- Suspension Br., N.Y. (N.Y.C., Erie, L.V.)		Fort Erie, Ont.- Buffalo, N.Y. (N.Y.C., Erie, D.L. & W., P. R.R.)		Sarnia, Ont.- Port Huron, Mich. (C.N.)		Windsor, Ont.- Detroit, Mich. (various)		Depot Harbor, Ont.- Milwaukee and Chicago (various)		Total
	To U.S.	From U.S.	To U.S.	From U.S.	To U.S.	From U.S.	To U.S.	From U.S.	To U.S.	From U.S.	To U.S.	From U.S.	To U.S.	From U.S.	
1929	71,796	87,900	150,668	635,532	1,347,915	882,150	1,823,831	3,856,809	1,953,527	3,808,278	383,900	351,300	82,447	289,864	5,764,079
	<u>159,696</u>		<u>786,195</u>		<u>2,230,065</u>		<u>5,680,640</u>		<u>5,761,805</u>		<u>685,200</u>		<u>322,311</u>		9,861,833
1930	132,463	49,300	129,330	499,795	1,036,758	999,915	1,262,148	3,295,578	1,361,674	3,020,821	253,925	279,950	72,196	182,118	4,248,494
	<u>181,763</u>		<u>629,125</u>		<u>2,036,673</u>		<u>4,557,726</u>		<u>4,382,495</u>		<u>533,875</u>		<u>254,314</u>		8,327,477
1931	46,066	23,300	131,107	406,849	905,605	764,385	983,020	2,357,553	951,845	2,547,433	219,150	217,025	67,030	200,093	3,303,823
	<u>69,366</u>		<u>537,956</u>		<u>1,669,990</u>		<u>3,340,573</u>		<u>3,499,278</u>		<u>436,175</u>		<u>267,123</u>		6,516,638
1932	28,179	26,950	78,184	303,648	681,208	529,836	766,176	1,663,233	661,707	1,963,336	131,050	152,225	59,288	207,573	2,405,792
	<u>55,129</u>		<u>381,832</u>		<u>1,211,044</u>		<u>2,429,409</u>		<u>2,625,043</u>		<u>283,275</u>		<u>266,861</u>		4,846,801
1933	21,886	19,200	21,321	197,208	749,759	512,986	928,809	1,371,645	771,669	1,984,287	72,275	125,800	71,569	154,235	2,637,288
	<u>41,086</u>		<u>218,529*</u>		<u>1,262,745</u>		<u>2,300,454</u>		<u>2,755,956</u>		<u>198,075</u>		<u>225,804</u>		4,365,361
1934	48,484	24,800	40,922	200,875	712,974	618,792	1,041,095	1,531,035	883,396	2,326,891	64,625	210,775	60,991	126,184	2,852,487
	<u>78,284</u>		<u>241,797*</u>		<u>1,331,766</u>		<u>2,572,130</u>		<u>3,210,287</u>		<u>275,400</u>		<u>187,175</u>		5,039,352

## Character of shipments

To U.S.	Lumber, pulp- wood, pulp	Flour, feldspar, lumber, pulpwood, wood, pulp, print- ing paper	Grain, feed, or- anges, dairy prod- ucts, meat, lum- ber, mfgs., mdse.	Perishables, misc.	Grain products, cereals, fruit, vegetables, lum- ber, pulp, autos, sugar, mdse., misc.	Paper, canned goods, mdse., misc.	Gen'l pkg. frt., including coffee, sugar, crude rub- ber, etc.
From U.S.	Coal, soda, mdse.	Coal, mdse.	Flour, potatoes, fruit, hay, straw, lumber, coal, coke, lime, stone, brick, sugar, molasses, mfgs., mdse.	Coal, coke, steel, mdse., misc.	Grain, cereals, dairy products, livestock, meat, lumber, autos, machinery, mdse., misc.	Coal, autos and parts, mdse., misc.	Bulk grain, bagged grain products, wool

\* Note differences between these figures and those appearing on p. 94, *supra*.

and Detroit-St. Clair frontiers, but the Grand Trunk continued under this handicap, except where it, too, in some degree adopted the additional rail, until in 1873 its lines west of Montreal, and in 1874 those east of that point, were changed to standard gauge. In fact by this time practically all of the railways of Canada had adopted the 4' 8½" gauge, which permitted the free interchange of equipment with American railroads at the gateways.

#### CANADIAN PACIFIC RAILWAY

From the very earliest days of the railway in North America transcontinental routes were proposed in whole or part through Canada from coast to coast, and in 1854 this reached such a pass that Canadians and Americans jointly petitioned the Legislative Assembly of Canada for the incorporation of "the Northern Pacific Railway Company" to build from Montreal up the valley of the Ottawa and along the north shore of Lake Huron to the western boundary of Canada as it then existed, beyond which the course was to follow the south shore of Lake Superior within the United States and thence to Puget Sound and the mouth of the Columbia River.<sup>6</sup>

Nothing came from this until the union of the several provinces into the Dominion of Canada in 1867 made a transcontinental line of communication entirely on Canadian soil a necessity from a national standpoint, regardless of the physical barrier north of the Great Lakes, and regardless of the uncertainty of a commercial return from such a venture in the then uninhabited virgin plains and forbidding mountain ranges of the Northwest. This was just as impelling from the political angle as the uniting of the Ohio Valley by canal with the Atlantic seaboard as advocated by Washington in 1784 for the preservation of the union of the States, and just as necessary as the linking of California with the states east of the Missouri by means of the Central Pacific-Union Pacific in 1869.

After the political turmoil of the 1870's in Canada, in which American financial and railroad interests played a part, the building of the Canadian Pacific Railway under new auspices, with government aid, was commenced in 1881 and completed between Montreal and the Pacific coast in 1886, followed in 1890 by its acquisition of the extension across Maine to Saint John, New Brunswick, and the

6. See p. 56, *supra*; also pp. 124 *et seq.*, *infra*.

building in that year of a branch through the Ontario Peninsula to the Windsor-Detroit gateway, where it connected by means of car ferry with the Michigan Central portion of the New York Central system.<sup>7</sup> In 1884 it had acquired the St. Lawrence & Ottawa connecting with the New York Central at the Ogdensburg-Prescott gateway, and in 1895 it entered into the arrangement with the New York Central Lines for the joint control of the Toronto, Hamilton & Buffalo Railway.

But the Canadian Pacific was not satisfied with the confinement of its activities to Canadian soil only. It built from Sudbury on its transcontinental route to the border at Sault Ste Marie, Ontario, and at that gateway in 1888 it met two American lines over which it acquired control in 1890—the Duluth, South Shore & Atlantic Railway leading to Duluth, Minnesota, and the Minneapolis, St. Paul & Sault Ste. Marie Railway leading to the Twin Cities, Minnesota, and eventually to connections at the border having their termini at Winnipeg, Manitoba, and Pasqua (near Moose Jaw), Saskatchewan. In 1909 it also obtained control of the Wisconsin Central Railway from the Twin Cities to Chicago, beyond which by traffic arrangements with the Michigan Central Railroad it hooked up with its Ontario line at the Detroit-Windsor gateway. These roads west of Sault Ste Marie and Chicago are treated in the succeeding chapter. Like the Canadian National Railways the Canadian Pacific possesses three links in its transcontinental course through the Great Lakes basin, but in its case two of them are on American soil whereas in the case of the Canadian National system only one passes through the United States.

Within the Great Lakes Region, therefore, the Canadian Pacific Railway, apart from its access to the Niagara Frontier by means of the Toronto, Hamilton & Buffalo Railway, functions through four border gateways, namely: Prescott-Ogdensburg, Port Burwell-Ashtabula, Windsor-Detroit, and Sault Ste Marie. At these gate-

7. Subsequent to 1910 it became possible to use the tracks of the Detroit River Tunnel Company, belonging to the New York Central system, as an all-rail connection between Windsor, Ontario, and Detroit, Michigan, through the instrumentality of the Essex Terminal Railway's belt line. See p. 83, *supra*, and p. 174, *infra*.



ways its approximate total volume of traffic, expressed in tons, in the years 1929 to 1934, inclusive, was as follows:<sup>8</sup>

TABLE 21

*Canadian Pacific Tonnages through Great Lakes Gateways,  
1929 to 1934*

	Prescott, Ont.— Ogdensburg, N.Y. (N.Y.C.)	Port Burwell, Ont.— Ashtabula, Ohio (P.R.R.)	Windsor, Ont.— Detroit, Mich. (M.C. R.R. and others)	Sault Ste Marie (M.St.P. & S.Ste.M. and D.S.S. & A.)	Total
1929 To U.S.	850,325	36,659	630,278	265,902	1,283,164
From U.S.	577,368	361,216	842,101	438,230	2,218,915
	<u>927,693</u>	<u>397,875</u>	<u>1,472,379</u>	<u>704,132</u>	<u>3,502,079</u>
1930 To U.S.	289,940	5,222	622,830	239,772	1,157,764
From U.S.	496,530	333,670	652,201	317,928	1,800,329
	<u>786,470</u>	<u>338,892</u>	<u>1,275,031</u>	<u>557,700</u>	<u>2,958,093</u>
1931 To U.S.	194,927	5,683	542,460	183,716	926,786
From U.S.	436,023	319,846	538,071	210,652	1,504,592
	<u>630,950</u>	<u>325,529</u>	<u>1,080,531</u>	<u>394,368</u>	<u>2,431,378</u>
1932 To U.S.	123,971	1,229	445,674	154,050	724,924
From U.S.	265,842	228,403	369,904	90,636	954,785
	<u>389,813</u>	<u>229,632*</u>	<u>815,578</u>	<u>244,686</u>	<u>1,679,709</u>
1933 To U.S.	137,255	2,458	466,943	165,386	772,042
From U.S.	158,720	178,074	322,450	74,204	733,448
	<u>295,975</u>	<u>180,532</u>	<u>789,393</u>	<u>239,590</u>	<u>1,505,490</u>
1934 To U.S.	119,597	1,178	529,927	181,558	832,260
From U.S.	201,164	158,515	348,298	130,676	838,653
	<u>320,761*</u>	<u>159,693</u>	<u>878,225</u>	<u>312,234</u>	<u>1,670,913</u>

\* Note differences between these figures and those appearing on pp. 87 and 98, *supra*, respectively.

It is interesting to observe in this that the excess of Canadian imports over exports, amounting to 73 per cent in 1929, gradually decreased until they almost balanced in 1934. In fact, at Detroit and Sault Ste Marie the situation was reversed in the six years so that more was delivered there to the United States than was received from the other side of the border. The dropping off at these gateways was

8. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

fully as severe as in the case of the Canadian National border crossings, and the rate of recovery was in about the same proportion.

### TORONTO, HAMILTON & BUFFALO RAILWAY

Entirely within the Dominion lies the Toronto, Hamilton & Buffalo Railway, extending from Waterford on the Michigan Central through Hamilton to Welland, Ontario, with a branch to Port Maitland and running rights over the Canadian National branch to Port Colborne on the northern shore of Lake Erie. It was opened in 1896 under the joint control of New York Central Lines and the Canadian Pacific, which thereby secured reciprocal entry to their respective territories. One hundred and eleven miles in all are operated in this system, none of which penetrates the United States, although its trains have crossed the border into Buffalo via the International Bridge since 1897. Its car-ferry service between Port Maitland and Ashtabula Harbor in Ohio, established in 1916, was discontinued in 1932.<sup>9</sup>

### SUMMARY—GREAT LAKES GATEWAYS

In summarized form the location of the border gateways in the Great Lakes Region and the mileages operated beyond the border by or in the interest of the railways of each country in 1935 are set forth in Table 22.<sup>10</sup>

From this it will be seen that the railway holdings of each country beyond the border in the Great Lakes Region are not very far apart as to lengths of line, those of the United States in Canada amounting to 1,124.6 miles and those of Canada in the United States 1,030.8 miles.

Measured by the approximate volume of traffic interchanged in 1933, these thirteen gateways compare as shown in Table 23.<sup>11</sup>

9. See note, p. 65, *supra*.

10. Correspondence respecting Railway Interrelations of the United States and Canada, 1935–1936, and *Statistics of Steam Railways of Canada, 1934*. For official data for 1933, see p. 20, *supra*.

11. As figures for the New York Central Lines tonnages interchanged at the Suspension Bridge, Buffalo, and Detroit gateways are unavailable for the year 1933, those for 1934 are used instead. In all instances data furnished by the railways, respectively, are used, except those for the Rouses Point, Malone, and Rooseveltown gateways for which data from the *Statistics of Steam Railways of Canada, 1933*, p. 185, are used. See pp. 87, 88, 92, 100, 102, 112, and 115, *supra*.

TABLE 22

*Great Lakes Gateways and Cross-Border Mileages*

Railway systems	In the United States	Gateways	In Canada	Operated mileages beyond the border	
				Canadian holdings in the U.S.	American holdings in Canada
N.Y.C. Lines	Malone, N.Y.	Huntingdon, Que.		..	60.7
	Rooseveltown, N.Y.	Cornwall, Ont.		..	58.7
	Ogdensburg, N.Y.	Prescott, Ont.		..	..
	Suspension Bridge, N.Y.	Niagara Falls, Ont.	}	..	381.2
	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.			
	Detroit, Mich.	Windsor, Ont.			
					500.6*
D. & H. R.R.	Rouses Point, N.Y.	.....		..	41.7
B. & O. Ry.	Charlotte (Genesee Dock), N.Y.	Cobourg, Ont.		..	..
E. R.R.	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.		..	..
	Suspension Bridge, N.Y.	Niagara Falls, Ont.		..	..
L.V. R.R.	Suspension Bridge, N.Y.	Niagara Falls, Ont.		..	..
D.L. & W. R.R.	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.		..	..
P. R.R.	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.		..	2.5
	Ashtabula, Ohio	Port Burwell, Ont.		..	..
Wabash Ry.	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.	}	..	243.6
	Suspension Bridge, N.Y.	Niagara Falls, Ont.			
	Detroit, Mich.	Windsor, Ont.			
P.M. Ry.	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.	}	..	336.2
	Suspension Bridge, N.Y.	Niagara Falls, Ont.			
	Detroit, Mich.	Windsor, Ont.			
C.N. Rys.	Fort Covington, N.Y.	St. Agnes, Que.		22.3	..
	Charlotte (Genesee Dock), N.Y.	Cobourg, Ont.		..	..
	Suspension Bridge, N.Y.	Niagara Falls, Ont.		0.3	..
	Buffalo (Black Rock), N.Y.	Fort Erie (Bridgeburg), Ont.		0.6	..
	Port Huron, Mich.	Sarnia, Ont.	}	1,007.6	..
	Detroit, Mich.	Windsor, Ont.			
	Chicago, Ill., and Milwaukee, Wis.	Depot Harbor, Ont.		..	..
C.P. Ry.	Ogdensburg, N.Y.	Prescott, Ont.		..	..
	Ashtabula, Ohio	Port Burwell, Ont.		..	..
	Detroit, Mich.	Windsor, Ont.		..	..
	Sault Ste Marie, Mich.	Sault Ste Marie, Ont. (see Northwestern Gateways)		..	..
				..	..
Total existing cross-border mileage served through 18 different gateways, of which one, Rouses Point, also appears among the northeastern gateways				1,030.8	1,124.6

\* See p. 86, *supra*.



TABLE 23

*Summarized Tonnage Interchanges through Great Lakes Gateways in 1933*

Gateways—U.S. stations	Interchanging railway systems	Tonnages interchanged		
		From Canada to the U.S.	From the U.S. to Canada	Total
Detroit, Mich.	N.Y.C. Lines <i>et al.</i>	1,180,000	2,030,000	3,210,000‡
	C.N. Rys. <i>et al.</i>	72,275	125,800	198,075
	C.P. Ry. <i>et al.</i>	466,943	322,450	789,393
	Wabash Ry. <i>et al.</i>	669,250	954,237	1,623,487
	Pere Marquette Ry. <i>et al.</i>	473,878	1,368,361	1,842,239
		<u>2,862,346</u>	<u>4,800,848</u>	<u>7,663,194</u>
Suspension Bridge, N.Y.	N.Y.C. Lines <i>et al.</i>	1,160,000	810,000	1,970,000‡
	C.N. Rys. <i>et al.</i>	749,759	512,986	1,262,745
	Wabash Ry. <i>et al.</i>	485,509	254,957	740,466
	Pere Marquette Ry. <i>et al.</i>	1,368,361	473,878	1,842,239
		<u>3,763,629</u>	<u>2,051,821</u>	<u>5,815,450</u>
Buffalo (Black Rock), N.Y.	N.Y.C. Lines <i>et al.</i>	920,000	810,000	1,730,000‡
	C.N. Rys. <i>et al.</i>	928,809	1,371,645	2,300,454
	Wabash Ry. <i>et al.</i>	468,728	414,293	883,021
		<u>2,317,537</u>	<u>2,595,938</u>	<u>4,913,475</u>
Port Huron, Mich.	Canadian National Rys.	771,669	1,984,287	2,755,956
Rouses Point, N.Y.	Delaware & Hudson R.R. (Napierville Jc. Ry.)	199,921	272,085	472,006
Ogdensburg, N.Y.	N.Y.C. Lines and C.P. Ry.	137,255	158,720	295,975*
Sault Ste Marie, Mich.	C.P. Ry., "Soo" Line, and D.S.S. & A. Ry.	165,386	74,204	239,590
Malone, N.Y.	N.Y.C. Lines (St. Lawrence & Adirondack Ry.)	133,300	102,394	235,694
Chicago, Ill., and Milwaukee, Wis., via Depot Harbor, Ont.	C.N. Rys.	71,569	154,235	225,804
Charlotte, N.Y.	B. & O. R.R. and C.N. Rys.	21,321	197,208	218,529†
Ashtabula, Ohio	P. R.R. and C.P. Ry.	2,458	178,074	180,532*
Roosevelt town, N.Y.	N.Y.C. Lines (Ottawa & New York Ry.)	27,782	49,559	77,341
Fort Covington, N.Y.	N.Y.C. Lines and C.N. Rys.	21,886	19,200	41,086
Total at 13 different gateways in 1933		<u>10,496,059</u>	<u>12,638,573</u>	<u>23,134,632</u>

\* Canadian Pacific Railway figures used.

‡ Assumed to be the same as in 1934.

† Canadian National Railways figures used.

The information in this table cannot be said to be correct in all particulars, because to some extent duplications of tonnages may have occurred, discrepancies between the figures given by connecting carriers for the same interchanges have been found, non-revenue freight has been included in some cases and not in others, approximations have been necessary where the obtainable data are given in

carloads rather than in tons, and figures for the year 1934 have been employed where they are unavailable for the year 1933. Nevertheless, the data are believed to be sufficiently close to the truth to warrant the conclusion that on the whole the enormous movement of revenue and non-revenue freight between the two countries in this region in 1933 was remarkably well balanced.

Taking the two frontiers between which the peninsula of Ontario intervenes, it will be noted in the subjoined table that something like ten million tons flowed across each of them in the off-year of 1933:

	<i>Tonnage interchanged</i>		
	<i>From Canada to the U.S.</i>	<i>From the U.S. to Canada</i>	<i>Total</i>
Niagara Frontier			
Suspension Bridge and Buffalo (Black Rock)	6,081,166	4,647,759	10,728,925
Detroit-St. Clair Frontier			
Detroit and Port Huron	3,634,015	6,785,135	10,419,150
Total	9,715,181	11,432,894	21,148,075

That the eastbound movement at these frontiers predominates over the westbound to the extent of 50 per cent is brought out in the following tabulation:

	<i>Tonnage interchanged</i>		
	<i>Niagara Frontier</i>	<i>Detroit-St. Clair Frontier</i>	<i>Total</i>
Eastbound	6,081,166	6,785,135	12,866,301
Westbound	4,647,759	3,634,015	8,281,774
Total	10,728,925	10,419,150	21,148,075

From this it is obvious that these trans-Canadian routes between the Detroit-St. Clair and Niagara frontiers are of the utmost importance to both countries in the movement of overhead traffic between points in the United States; American tonnages destined for delivery in Canada are in large part offset by collections in Canada consigned to and through the United States. Americans thus profit from the economy and efficiency incident to the use of a direct line through a comparatively open country instead of a more roundabout course through the densely settled territory south of Lake Erie; Ca-

nadians profit from the access thus had to the great traffic centers on American soil, such as Chicago, Detroit, Milwaukee, Cincinnati, and St. Louis and beyond; the people of the United States and Canada profit from the competition rendered by the rail carriers of both countries in their strife for common ends.

In the year 1933 the average mileages of railways operated in the Great Lakes and Central Eastern regions of the United States were as set forth below:<sup>12</sup>

TABLE 24

*Operated Railway Mileages in Great Lakes and Central Eastern Regions*

	<i>Miles</i>
American roads with border contacts—	
New York Central Lines (excluding mileage in Canada)	11,188
Delaware & Hudson Railroad	879
Baltimore & Ohio Railroad	6,473
Erie Railroad	2,588
Lehigh Valley Railroad	1,359
Delaware, Lackawanna & Western Railroad	998
Pennsylvania Railroad (excluding mileage in Canada)	11,349
Wabash Railway (excluding mileage in Canada)	2,570
Pere Marquette Railway (excluding mileage in Canada)	2,075
Canadian Lines in the United States	
Canadian National	1,032
Canadian Pacific	0
	<hr/> 1,032*
Total mileage of roads directly connected with gateways at the border	40,511
Roads indirectly connected with border gateways	13,234
	<hr/> 53,745†
Grand total (all classes)	

\* 1,031 miles for the year 1935–36, per data furnished by the carriers. See p. 117, *supra*.

† Includes duplications where Canadian lines have trackage rights over American railways.

12. *Statistics of Railways in the United States, 1933*, pp. s-2, 17, 34–35, 52–53, 170 and 182. The Great Lakes Region comprises the section on the Canadian boundary between New England and the western shore of Lake Michigan to Chicago, and north of a line from Chicago via Pittsburgh to New York. The Central Eastern Region comprises the section south of the



In contrast with the situation along the Northeastern section of the border, where the 43,081 miles of operated line on the Canadian side of the border are directly and indirectly connected through 17 gateways<sup>13</sup> or crossings with 7,677 miles of railways in New England, the same Canadian roads along the Great Lakes section are joined in similar manner through 13 gateways<sup>13</sup> to 53,745 miles of railway in the section of the United States which lies north of the Ohio and Potomac rivers and east of St. Louis, Peoria, and Chicago. The 10 millions of Canadians are thus put in close trade and personal relations with upward of 50 million Americans living in the states of New York, New Jersey, Pennsylvania, Delaware, Maryland, Michigan, Ohio, Indiana, and Illinois and the District of Columbia. Three American systems—the New York Central, Wabash, and Pere Marquette—are given the opportunity of completing their east-and-west movements on their own or leased rails across the territory of Canada between the Niagara and Detroit–St. Clair frontiers, just as the Canadian Pacific is enabled to complete its trans-continental route to the Maritime Provinces by traversing the State of Maine. The Canadian carriers in the same manner are permitted to enjoy the use of American soil for their alternate east-and-west through routes south of the Great Lakes. The carriers on both sides of the border, by coming in contact with each other at the gateways, are able to participate in joint north-and-south movements from one country to the other to their mutual good. The leading cities of Canada—Montreal, Toronto, Hamilton, Quebec, and Ottawa—and their tributary areas are thus linked with the great cities of New York, Chicago, Philadelphia, Detroit, Cleveland, St. Louis, Baltimore, Pittsburgh, Milwaukee, Buffalo, Washington, and Cincinnati, and others within the limits of the Great Lakes and Central Eastern regions of the United States.

Great Lakes Region, east of a line from Chicago through Peoria to St. Louis and the Mississippi River to the mouth of the Ohio River and north of the Ohio River to Parkersburg, W. Va., and a line thence to the southwestern corner of Maryland and by the Potomac River to its mouth.

13. Owing to the inclusion of the Rouses Point gateway in both the Northeastern and Great Lakes categories, the total number of gateways in those regions is 29, instead of 30.

## CHAPTER VI

### NORTHWESTERN GATEWAYS

IN the East, as we have seen, the railway followed the settler; in the West it preceded him. From the western edge of the Great Lakes basin to the Pacific the region along the border for nearly two thousand miles remained a wilderness inhabited by "savage beasts and still more savage men" when the iron horse appeared upon the scene to bring in immigrants and take out the products of their toil. The railway there was the pioneer.

It is true that the steamboat had arrived at Fort Snelling near the site of St. Paul, Minnesota, at the head of navigation in the Mississippi as early as 1823 and as far up the Missouri River as the mouth of the Yellowstone in 1832. On the other side of the border what later became the Province of Manitoba had been opened for settlement by Lord Selkirk from the shores of Hudson Bay in 1812. But the means of transportation were so archaic and the Indian tribes and half breeds so hostile to the invader, that the Northwest long continued unpeopled by the white man, except at widely scattered mere traders' posts in the Hudson's Bay Company's domain, including the hamlet of Fort Garry, now Winnipeg, on the north, and the far-off village of St. Paul and its neighbor at the Falls of St. Anthony on the south. Red River carts supplemented by river transports were the laborious means by which the furs and pelts and meager products of the soil from both sides of the border were conveyed to the steamboat in the Mississippi and supplies in return brought inward. To the west of the Red River the Indian and the buffalo reigned supreme.

The coming of the railroad from Chicago and Milwaukee to the shores of the Mississippi in Wisconsin and Illinois, in the mid-1850's, gave stimulus to the border region by shortening the river journey in connection with a more direct year-round overland route to the East. But the blighting effects of drought and flood and ice on travel by water, and the well-nigh impassable condition of prairie roads by land, joined with the hostility of the red man to close the doors of the

Northwest to settlement on a substantial scale. Then, too, the wonderful fertility of the soil of the Red River Valley and prairie lands as far west as the foothills of the Rockies, and the vast deposits of recoverable iron ore in northern Minnesota, precious metals in the mountains, and coal in widely distributed fields were generally unknown to the people of both countries. It was not until 1862 that the railroad first appeared in the Northwest when a short ten miles of the St. Paul & Pacific Railroad was opened from St. Paul to the Falls of St. Anthony, followed by the opening of all-rail service from the neighborhood of St. Paul to Lake Michigan in 1867, to Duluth in 1870, and to the head of steamboat navigation in the Red River in 1871. The laborious 400-mile journey by carts from St. Paul to the border at Pembina, North Dakota, thereupon was destined to become a thing of the past.

However, a few choice spirits long before this had envisaged the opening of the Far West to settlement by means of a transcontinental railroad. Advocated by Dr. Samuel B. Barlow, the Rev. Samuel Parker, and others between 1832 and 1835 while rails were first being laid on the Atlantic seaboard, and championed in the United States most persistently by Asa Whitney between 1845 and 1855, and in Canada by Maj. Robert Carmichael-Smyth in 1849,<sup>1</sup> this dream was first realized in 1869 when the Union Pacific-Central Pacific came into being across prairie and mountain midway between the northern and southern boundaries of the United States from the Missouri River to the Pacific coast. In what follows will be told how the transcontinental lines of the Northwestern Region were conceived and brought to life and the interconnections created which bound them together—the Northern Pacific and Great Northern railways on the south side of the border and the Canadian Pacific and Canadian National systems on the north. Through their instrumentality on the Canadian side of the border an outlet was to be given to the eastern market and St. Lawrence ports without dependence on the favor of a foreign State, thereby squelching the move that had been made in Manitoba and British Columbia for annexation to the United States where had lain their natural market. On

1. Preceded in 1829 by the suggested utilization of lakes and water courses for a route to the Pacific, and by the prophecy of Sir Richard Bonycastle that a railroad would yet be built from Halifax to Nootka Sound.



both sides of the border, separately and in unison, these railways were to open up a region having tremendous possibilities.

#### NORTHERN PACIFIC RAILWAY

It was in 1853, the year in which the Grand Trunk Railway started on its course westward from Portland, Maine, and Montreal, Quebec, to Chicago, that Josiah Perham of Boston, Massachusetts, envisioned a "Pacific Railroad" and in response to his pleas Congress granted a charter to the Northern Pacific Railroad in 1864. As already explained,<sup>2</sup> it was backed by American and Canadian interests and had for its purpose the creation of an ocean-to-ocean rail route. It was to proceed from Boston over existing railways in the United States and Canada via northern Vermont to Montreal, thence traverse the Province of Ontario to Sault Ste Marie either through alliance with the Grand Trunk project or otherwise, and thence skirt the southern shore of Lake Superior to the western boundary of the State of Wisconsin, beyond which it was to be so located as to serve the needs of the Northwest on both sides of the border. With the decision of the Dominion Government to build such a line entirely on its own soil, after the Confederation had been made a reality in 1867, this conception of an international transcontinental route fell to the ground and construction, started in 1870, was confined to the portion lying westward from the head of the Great Lakes.

Financial reverses brought the enterprise to a halt at Bismarck, North Dakota, on the Missouri River in 1873. They also resulted in loss of control of its old rival, the St. Paul & Pacific Railroad, with its large land grant as well as completed lines reaching to St. Paul and the Falls of St. Anthony and to the shores of the Red River on the west, and the right to build northerly to St. Vincent on the border where connection was to be made with the branch to be built by the Canadian Government southerly from Fort Garry (Winnipeg).

Shorn of its St. Paul & Pacific holdings, the road restarted its westward course in 1879 and reached its destination on Puget Sound in 1883, fifty years after birth had been given to the idea of a transcontinental rail route and thirty years after Perham had given substance to the idea. Subsequently, its lines were further extended so

2. See pp. 54-56 and 113, *supra*.







as to join Portland, Oregon, Seattle, Washington, and Vancouver, British Columbia, on the Pacific coast, with the head of the Great Lakes and the Twin Cities in Minnesota and with Winnipeg in Manitoba. It was a commercial venture, rooted in the belief that the opening of the Northwest to settlement would in time bring financial reward to the capital invested. The United States Government's interest in the enterprise, secondary to those of commerce, was evidenced by the aid given to it in the form of extensive land grants. Many were its early vicissitudes, in which such outstanding personalities as Jay Cooke and Henry Villard played leading parts. As the pioneer transcontinental line in the Northwest it well served its purpose and blazed the way for others to follow.

In losing the opportunity of reaching Winnipeg via an extension of the St. Paul & Pacific to St. Vincent on the border, the Northern Pacific was forced in the end to another course. The people of Manitoba having become dissatisfied with the monopoly enjoyed by the Canadian Pacific Railway under the terms of its Dominion charter, the Province brought about the construction of a line on the west side of the Red River, parallel to the Canadian Pacific's branch on the east side, from Winnipeg southward to the border at Emerson Junction, Manitoba, where a connection was made with the Northern Pacific's branch extending northward from Manitoba Junction through Grand Forks and Grafton to Pembina, North Dakota. Operation over this line was commenced in 1888 amidst the rejoicings of the people on both sides of the border. The Northern Pacific Railway, through a subsidiary, became the possessor of the Canadian portion of this route, as well as a branch leading therefrom to Brandon and Hartney, and another from Winnipeg to Portage la Prairie and thence to Beaver and Delta, all in the province of Manitoba. This system in Canada, known as the Northern Pacific & Manitoba Railway, totaled 354.6 miles of line which in 1901 were leased for a period of 999 years to the Provincial Government and in turn subleased at that time to the Canadian Northern Railway, now a part of the Canadian National Railways.<sup>8</sup> The Northern Pacific had now withdrawn from the soil of Manitoba. However, two years later, in 1903, the Midland Railway Company of Manitoba was organized in the joint interest of the Northern Pacific and Great Northern

8. See p. 137, *infra*.

railways and a branch 6.4 miles long was built in Winnipeg connecting with the old line, 65.7 miles long, originally owned by the Northern Pacific between Winnipeg and the border at Emerson Junction—Pembina, over which trackage rights were secured in 1912. At the present time the Northern Pacific, jointly with the Great Northern, operates 74 miles<sup>4</sup> of line in Manitoba, through the Pembina—Emerson Junction gateway and along the western side of the Red River into Winnipeg, for all practical purposes as it did when that service was inaugurated in 1888.

At the other end of its system the Northern Pacific, in 1891, effected a connection with the Canadian Pacific at the border near Sumas, Washington, and there still interchanges traffic passing to and from Vancouver and other Canadian points. In 1913 it acquired the joint use of the track of the Vancouver, Victoria & Eastern Railway, a Canadian subsidiary of the Great Northern Railway, from this gateway to Vancouver, and began operation thereover in January, 1918, only to discontinue it in August of the same year. Three quarters of a mile of main line remain in its possession and that of the Great Northern Railway at the Vancouver terminal, but it has ceased to participate in its operation.

At International Falls on the Rainy River in Minnesota the Northern Pacific serves Canadian industrial interests, but does not operate it as a gateway.

It will be seen that through its two gateways to Canada the Northern Pacific, jointly with the Great Northern, in all operates over 74 miles of line beyond the border, of which 6.4 miles are owned and 67.6 miles operated under trackage rights.

Through these gateways the traffic of the Northern Pacific moved in the volume, in tons, set forth in Table 25.<sup>5</sup>

It would thus appear that in the three years for which these statistics are obtainable, the movements into Canada far exceeded those

4. In addition to this the Great Northern operates a 1.7-mile connection between Emerson Junction and West Lynn, over which its traffic moves in and out of Canada at the border, thus making the total Midland Railway mileage 75.7 as reported in *Statistics of Steam Railways of Canada, 1933* (p. 20, *supra*).

5. Correspondence respecting Railway Interrelations of the United States and Canada, 1935–36.

TABLE 25

*Northern Pacific Tonnages through Northwestern Gateways, 1932 to 1934*

	1932			1933			1934		
	To Canada	From Canada	Total	To Canada	From Canada	Total	To Canada	From Canada	Total
Pembina, N.D.-Emerson Junction, Man., gateway*									
Agricultural products	11,916	846	12,762	10,015	688	10,703	9,675	892	10,567
Animals and their products	9	83	92	11	102	113	17	182	199
Mine products	18,411	3,240	21,651	21,379	3,841	25,220	23,436	2,695	26,131
Forest products	747	139	886	435	153	588	808	108	916
Manufactures and miscellaneous	7,299	2,453	9,752	7,731	2,409	10,140	8,152	1,721	9,873
Total	38,382	6,761	45,143	39,571	7,193	46,764	42,088	5,598	47,686
Sumas, Wash.-Huntingdon, B.C., gateway†									
Agricultural products	9,533	8,733	18,266	4,517	8,024	12,541	6,907	10,001	16,908
Animals and their products	184	248	432	134	295	429	548	560	1,108
Mine products	554	250	804	1,221	366	1,587	1,319	318	1,637
Forest products	1,145	15,258	16,403	2,376	20,625	23,001	4,654	13,556	18,210
Manufactures and miscellaneous	3,872	3,239	7,111	3,352	4,522	7,874	13,499	9,250	22,749
Total	15,288	27,728	43,016	11,600	33,832	45,432	26,927	33,685	60,612
Grand total	53,670	34,489	88,159	51,171	41,025	92,196	69,015	39,283	108,298

\* Interchanges with both the Midland Railway and the Canadian National Railways.

† Tonnages include those interchanged with the British Columbia Electric Railway as well as the Canadian Pacific.



to the United States at the Pembina-Emerson Junction gateway, largely accounted for by coal shipments; and that the reverse was the case at the other cross-border connection where the predominating commodity was forest products. As a whole the major movement was northbound into Canada.<sup>6</sup>

### GREAT NORTHERN RAILWAY

Although ten years later than the Northern Pacific in reaching the coast and seven years behind the Canadian Pacific in the attainment of that end, the Great Northern, through its parent company the St. Paul & Pacific Railroad, was the first to arrive at the border in the Northwest and, in conjunction with the Dominion Government's branch from Winnipeg on the east bank of the Red River, afford the people of Manitoba an all-rail outlet to the outside world in 1878. Eight years more were to elapse before they were to have an outlet to the East for their products exclusively over Dominion soil, and ten years before the rival line on the other side of the Red River was to give them the benefits of competition over an alternative route via the Northern Pacific to the American market.

It should be explained that the predecessor of the St. Paul & Pacific, of which the Northern Pacific had lost the control in the panic of 1873, was the Minnesota & Pacific Railroad which was chartered by the Territory of Minnesota and endowed with a large land grant in 1857, with the purpose of reaching the "great grain and fur bearing regions of the North." The St. Paul & Pacific, too, fell into financial difficulties and was acquired in 1878 by a syndicate consisting of James J. Hill, Canadian born but a resident of Minnesota since 1856; Norman W. Kittson, a former factor of the Hudson's Bay Company; Donald A. Smith, afterward Lord Strathcona, who had been chief commissioner of the Hudson's Bay Company; George Stephen, afterward Lord Mount Stephen, who occupied the influential position of president of the Bank of Montreal; Richard B. Angus, vice president of the same bank; and John S. Barnes of J. S.

6. Data bearing on the history of the Northern Pacific Railway will be found in Smalley's *History of the Northern Pacific Railway* (1883); Hedges' *Henry Villard and the Railways of the Northwest* (1930); and other works listed in the Bibliography, *infra*; also in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

Kennedy & Company of New York. Under the new name of the St. Paul, Minneapolis & Manitoba Railroad, this system in 1879, with the backing of Canadian and American capital, began its policy of westward and northward expansion with a view to the interposition of its rails between the Northern Pacific line and the border and thereby to capture Canadian as well as American business.

Mr. Hill and the Canadian members of the syndicate were led by their success with this venture to undertake a similar rôle in 1880-81 in the building of the Canadian Pacific Railway. High railroad strategy to them meant the command of the railway situation on both sides of the international line; in a word, monopoly. Mr. Hill then advocated the location of the Canadian Pacific from Winnipeg to Sault Ste Marie along the south shore of Lake Superior because he considered that the north shore location on Canadian soil would involve undue cost and unremunerative traffic, and because it would not fit in with the plans of the St. Paul, Minneapolis & Manitoba Railroad in Minnesota. Failing in his purpose he resigned from the directorate of the Canadian Pacific in 1883 and as the directing genius of the successor of the St. Paul, Minneapolis & Manitoba, the Great Northern Railway, he devoted his energies to the development of the northern tier of northwestern states with many branches to the border and beyond. At the same time Mr. Stephen and Mr. Angus retired from the board of the St. Paul, Minneapolis & Manitoba Railroad and in so doing expressed the opinion that both companies "would have much to gain by the maintenance of an intimate and friendly alliance" in which the St. Paul, Minneapolis & Manitoba Railroad for a long time might enjoy the entire railway traffic between the Canadian Northwest and the United States, while the Canadian Pacific would strive for business seeking its natural channel through Canadian territory. Unsuccessful in his attempt, in cooperation with the Canadian Pacific, to gain control of the Northern Pacific in 1889, Hill declared his purpose to remove "all expensive rivalry and competition," and thereupon promptly and vigorously undertook the extension of his road to the Pacific coast, which was reached at Everett, Washington, in 1893. In this he had the support of his Canadian associate, Lord Mount Stephen.

Reference has been made to the joint use of the tracks of the Midland Railway of Manitoba by the Great Northern and Northern Pa-

cific, on the west side of the Red River between the Pembina-Emerson Junction gateway and Winnipeg, involving the operation of 75.7 miles of road inaugurated in 1912. In the handling of Great Northern traffic this route took the place of the Canadian Pacific's line to Winnipeg on the east side of the Red River, already mentioned as having been opened as a through route in 1878, which since 1904 has been the route over which the traffic of the Minneapolis, St. Paul & Sault Ste. Marie Railway is handled to and from Winnipeg. Noyes, on the Minnesota side of the boundary, is the point of interchange of Minneapolis, St. Paul & Sault Ste. Marie and Canadian Pacific traffic, and Emerson on the Manitoba side just north of Noyes is the point where the Great Northern's Midland Railway route to and from Winnipeg joins its line south of the border along the eastern shore of the Red River by means of the aforesaid 1.7-mile connection.

A few miles west of the Red River the Great Northern has a line extending from Grand Forks, North Dakota, to a connection at the border with the Canadian Pacific Railway between Neche, North Dakota, and Gretna, Manitoba, opened in 1882. Originally, these rails extended over the border to Portage la Prairie, Manitoba, but since then they have been removed because of lack of business.

Still farther to the west a branch, opened in 1907, extends from Grafton, North Dakota, on the last-mentioned line to a junction with the Canadian Pacific at Morden, Manitoba, 15.2 miles beyond the border, which lies between Walhalla, North Dakota, and Haskett, Manitoba. Another branch, opened in 1907, leads into Canada from the Great Northern's main line at Church's Ferry, North Dakota, to Brandon, Manitoba, 69.5 miles north of the border crossing between St. John, North Dakota, and Bannerman, Manitoba. These two branches in Canada, 84.7 miles in length, are owned and operated by a subsidiary, the Brandon, Saskatchewan & Hudson's Bay Railway.

At Northgate on the border the Great Northern's branch from Berthold, North Dakota, on the main line, was connected in 1912 with the branch of the Canadian National Railways leading to Regina, Saskatchewan. Beyond this along the border the next contact is between Sweetgrass, Montana, and Coutts, Alberta, where the Great Northern's branch from the main line near Shelby, Montana, meets the Canadian Pacific's branch to Lethbridge, Alberta, both



having been built in 1890 and taken over by those companies, respectively, in 1912 as a means of entrance from Canada to Great Falls, Montana.

Next comes the branch from Rexford, Montana, to Fernie, British Columbia, on the Crow's Nest line of the Canadian Pacific Railway, which crosses the border between Gateway, Montana, and Newgate, British Columbia. Of this the 53.3-mile portion in Canada, known as the Crow's Nest Southern Railway, is made up of 33.7 miles of owned line and 19.6 miles operated under trackage rights. The portion extending to Morrissey was opened in 1903 and thence to Fernie in 1905.

In the State of Washington the Great Northern crosses the border at seven points. Proceeding from east to west the first of these is located between Boundary, Washington, and Waneta, British Columbia, where the branch from Spokane ends at Nelson, British Columbia, on the Canadian Pacific, the portion in Canada being known as the Nelson & Fort Sheppard Railway, opened in 1895, of which 54.9 miles are owned and 6 miles are operated under trackage rights, a total of 60.9 miles. Then come six crossings beyond which in Canada the lines are operated under the name of a subsidiary, the Vancouver, Victoria & Eastern Railway & Navigation Company, comprising 149.2 miles of owned line and 1.3 miles operated under trackage rights, a total of 150.5 miles of line. Two of these crossings—Laurier, Washington, to Grand Forks, British Columbia, to Danville, Washington—are on the branch from Marcus, Washington, opened in 1903-4, to Republic, Washington; two more—Curlew, Washington, to Midway, British Columbia, to Molson, Washington—are on the extension opened in 1906 from Curlew, Washington, through Canada to Molson, Washington;<sup>7</sup> another between Chopaka, Washington, and Similkameen, British Columbia, on the branch opened in 1909-10 from Wenatchee, Washington, to Princeton, British Columbia, on the Canadian Pacific, the portion beyond the latter point to Brookmere, British Columbia, having been discontinued in 1933; and the sixth, effected in 1891, between Blaine, Washington, and White Rock, British Columbia, on the main line from Everett, Washington, to Vancouver, British Columbia.

In all, therefore, the Great Northern in 1933 operated to or

7. Operation discontinued February 28, 1935, thus eliminating two gateways and 28.9 miles of owned line.

through 14 border gateways, beyond which in Canada it operated 96.6 miles under trackage rights and 328.5 miles owned by its subsidiaries, a total of 425.1 miles. In 1935 the number of gateways had fallen to 12 and the total mileage to 396.2, by reason of the discontinuances that have since taken place. The tonnage and character of traffic handled over them in 1933 were as follows:<sup>8</sup>

TABLE 26

*Great Northern Tonnages through Northwestern Gateways in 1933*

	<i>Midland Ry. of Manitoba*</i>	<i>Brandon, Saskatchewan &amp; Hudson's Bay</i>	<i>Crow's Nest Southern</i>	<i>Nelson &amp; Fort Sheppard</i>	<i>Vancouver Victoria &amp; Eastern</i>	<i>Total</i>
Agricultural products	9,698	17,444	45	1,346	21,462	49,995
Animals and their products	205	57	66	0	1,957	2,285
Mine products	12,766	1,154	2,953	16,127	8,829	41,829
Forest products	684	83	558	12,587	42,746	56,658
Manufactures and miscellaneous	7,114	782	177	3,515	60,722	72,310
Total	30,467	19,520	3,799	33,575	135,716	223,077

\* Tonnages from the *Statistics of Steam Railways of Canada, 1933*, lessened by the tonnages given by the Northern Pacific Railway for that year over the Midland Railway. These tonnages pass through the Emerson, Manitoba-Noyes, Minnesota, gateway.

These do not include tonnages interchanged with the Canadian Pacific at the border stations of Neche and Sweetgrass, nor with the Canadian National Railways at Northgate, reference to which will be found in the text dealing with those systems.

By far the larger part of this total movement was southbound into the United States, the reverse of which was true in the case of the Northern Pacific.<sup>9</sup>

#### CANADIAN PACIFIC RAILWAY

The building of the Canadian Pacific Railway from Lake Nipissing to the Pacific Ocean may well be termed one of man's most marvelous accomplishments, none the less so because of the bitter disap-

8. *Statistics of Steam Railways of Canada, 1933*, pp. 130-185, inclusive.

9. Information regarding the Great Northern Railway will be found in Pyle's *The Life of James J. Hill* (1917); Willson's *The Life of Lord Strathcona and Mt. Royal* (1915); and other works listed in the Bibliography, *infra*; also in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

pointments of the 1870's, of which mention has been made. Born in the desire of Canadians that their western possessions by all-Canadian means of communications should be brought within the fold of the Confederation of 1867, this enterprise so necessary in a political sense, languished sadly for many years. The thousand miles of rough, wooded country along the Canadian shore of Lakes Superior and Huron and thence to the Red River, the wide sweep of uninhabited prairie lands in which the prospect of remunerative traffic was extremely slim, and the range on range of lofty mountains which barred the way to the sea—all these were obstacles to make even the bold draw back.

In carrying out the Dominion's promise to British Columbia that a railway should be completed from the Pacific Ocean to the Eastern Provinces within ten years from the date of the admission of that Province to the Confederation in 1871, the Government, following the devastating effects of the "Pacific Scandal" in which American interests were involved in the early 1870's, planned an extension of then existing railways up the Ottawa River Valley to Lake Nipissing and thence to Georgian Bay, beyond which steamboats as a temporary measure were to bridge the water gap to Thunder Bay on Lake Superior (the site of Fort William and Port Arthur), thence a railway line to the Rainy River in which steamboats again would be used as a temporary expedient for several hundred miles westward to junction with a railway to be built to the coast. This manner of solution of the problem did not suit those who realized that the water links would be unusable in the winter season and that the transshipment of freight between rail and water carriers would spell inefficiency. Such a line of communication could not hope to compete on anywhere near even terms with the all-rail transcontinental routes completed and under way on the American side of the border. Then, too, the sluggishness of construction under government auspices in the ensuing years resulted in grave dissatisfaction which had become general in Canada when the agreed date of completion came within hailing distance, with comparatively little accomplished toward the desired end.

In consequence of this the people of Canada concluded that the then existing and proposed lines from Toronto and Montreal terminating at Callander at the east end of Lake Nipissing should be



continued westerly as an all-rail route exclusively on Dominion soil for some 2,550 miles to the Pacific. Sir Henry Tyler, on behalf of the Grand Trunk Railway, it will be recalled, had declined in 1876 to back it unless the link north of Lake Superior was omitted in favor of a line through the United States via Chicago—a position to which that company continued to adhere. The provisional contract for this performance was awarded in 1880 to a syndicate, later to be incorporated under the name of the Canadian Pacific Railway Company, of which the personnel was virtually the same as that which had made a pronounced success of the St. Paul, Minneapolis & Manitoba project in Minnesota—George Stephen and Duncan McIntyre of Montreal; John S. Kennedy of New York; Morton, Rose & Company of London; Kohn Reinach & Company of Paris; and Richard B. Angus and James J. Hill of St. Paul. In fact it was considered that the community of interest would be mutually advantageous. It was agreed that the work should be completed within ten years from the date of the final contract in 1881 and that the compensation for the undertaking of such a perilous enterprise should consist of \$25,000,000 in cash, 25,000,000 acres of land, freedom from duties on importations of construction materials and from taxation under certain conditions, a monopoly of rail transportation on the south for twenty years, the right to fix railway rates at will so long as profits did not exceed 10 per cent on the capital invested, and other concessions of value.

In addition to this the Government was to turn over to the newly organized company the several stretches of railway on which work had been commenced, after they had been completed in satisfactory form. These embraced some 700 miles of line, in which was included the branch from Winnipeg southerly along the east bank of the Red River to the border, connecting there in 1878 with the St. Paul & Pacific, later the St. Paul, Minneapolis & Manitoba Railroad and now the Great Northern Railway, as has been previously explained. Incidentally the use of this branch in this manner ceased in 1904 when the Great Northern's completion to the coast and the extension of the Minneapolis, St. Paul & Sault Ste. Marie Railway to the border at Noyes, Minnesota—Emerson, Manitoba, led to the transfer of the traffic of the Great Northern from the Canadian Pacific's entrance to Winnipeg to the one built by the Province of Manitoba on the other side of the Red River.

Under the inspired leadership of William C. Van Horne—American born in contrast with the Canadian birth of his contemporary, James J. Hill, on the other side of the border—this stupendous task was so far completed that through train service between Montreal and the Pacific, upward of 2,900 miles, was inaugurated in 1886, five years ahead of the agreed date of completion, and the system so rounded out through new construction and purchase of existing roads, that its service was made to span the continent from sea to sea in 1889.

As has been explained, Mr. Hill left the directorate of the Canadian Pacific in 1883 and failing in association with interests in that company to secure control of the Northern Pacific in 1889, pushed the system he headed, the Great Northern, onward along the southern side of the border to the Pacific, which was reached in 1893. This competition, together with that of the Northern Pacific which, upon the cancellation of the Canadian Pacific's monopoly in 1888, had gained an entrance to Manitoba over that Province's newly created branch on the western side of the Red River from the border to Winnipeg, led the Canadian Pacific to purchase control of the Minneapolis, St. Paul & Sault Ste. Marie in 1890 and extend that system to junctions with its, the Canadian Pacific's, Winnipeg branch at the Emerson-Noyes gateway in 1904 and in 1893 with the branch it built from Pasqua near Moose Jaw on its main line to the border between North Portal, Saskatchewan, and Portal, North Dakota. In this manner the Canadian Pacific came into control of this system now embracing 3,250.2 miles. Adding to this the acquired mileage of the Duluth, South Shore & Atlantic Railway, 559.2 miles, the 43.9 miles of the Mineral Range Railroad, and the 1,119.2 miles of the Wisconsin Central Railway leased by the Minneapolis, St. Paul & Sault Ste. Marie in 1909, the operated mileage controlled by the Canadian Pacific in the Northwestern Region and serving as trans-continental by-passes via Sault Ste Marie and Chicago, mounts up to the striking total of 4,972.5 miles<sup>10</sup> lying in six states of the Union.

Through three other points of contact with the border—Gretna,

10. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36. Included in the total of 4,972.5 miles are 104.9 miles of intersystem trackage and 2.3 miles of non-operated road, which deducted from the total leaves 4,865.3 miles, exclusive of duplications, etc., as of December 31, 1934.

Manitoba, Coutts, Alberta, and Huntingdon, British Columbia—the Canadian Pacific merely connects with American carriers to which reference has been made; but at the border contact between Kingsgate, British Columbia, and Eastport, Idaho, it possesses a third opening through which access over its own rails is had to United States soil west of the Great Lakes. Here the branch from its Crow's Nest Pass line, first recorded in the timetable in 1906 and connected through to Yahk in 1911, connects with the Spokane International Railway, of which it has control, leading to Spokane, Washington, and embracing 163.6 miles of operated line. The Crow's Nest Pass line, so important in its relation to the border, passes from Lethbridge, Alberta, through Nelson to a junction with the main line east of Vancouver, completed in 1898.

The traffic of the Canadian Pacific, therefore, crosses the border through six gateways in the Northwestern Region, through three of which connection is made with 5,136.1 miles<sup>11</sup> of operated line over which it exercises direct or indirect control on the American side of the border. The approximate tonnages handled through five of these gateways during the past six years are shown in Table 27.<sup>12</sup>

From this it is evident that, taken as a whole, the predominating movement in the years given was from the United States into Canada. At North Portal and Huntingdon, however, the reverse was the case, as was true, too, at Emerson in 1933 and 1934. Of special interest is the pronounced drop of nearly 67 per cent which took place in the interchanges between 1929 and 1932, followed by a partial recovery in the ensuing years.

#### CANADIAN NATIONAL RAILWAYS

The Canadian Northern and Grand Trunk Pacific railways, now embraced in the Canadian National Railways system, have had a tremendous effect on the development of the Canadian Northwest, although so far removed from the border as to have had much less to do with American rail carriers than the Canadian Pacific. The Canadian Northern, the child of Mackenzie and Mann, was the first

11. Excluding duplications, etc., this becomes 5,028.9 miles.

12. Correspondence respecting Railway Interrelations of the United States and Canada, 1935–36. Gretna, Manitoba (G.N. connection) is not shown as the tonnage passing there is practically negligible.



TABLE 27

*Canadian Pacific Tonnages through Northwestern Gateways,  
1929 to 1934*

	<i>Emerson, Man.— Noyes, Minn.* (M.St.P. &amp; S.Ste.M.)</i>	<i>No. Portal, Sask.— Portal, N.D. (M.St.P. &amp; S.Ste.M.)</i>	<i>Coutts, Alta.— Sweetgrass, Mont. (G.N.)</i>	<i>Kingsgate, B.C.— Eastport, Idaho (S.I.)</i>	<i>Hunting- don, B.C.— Sumas, Wash. (N.P.)</i>	<i>Total</i>
1929 To U.S.	168,359	510,643	5,939	120,380	60,424	865,745
From U.S.	207,200	345,344	210,576	229,372	35,963	1,028,455
	<u>375,559</u>	<u>855,987</u>	<u>216,515</u>	<u>349,752</u>	<u>96,387</u>	<u>1,894,200</u>
1930 To U.S.	127,123	413,235	7,608	70,512	46,197	664,675
From U.S.	140,045	235,341	149,811	189,618	27,498	742,313
	<u>267,168</u>	<u>648,576</u>	<u>157,419</u>	<u>260,130</u>	<u>73,695</u>	<u>1,406,988</u>
1931 To U.S.	57,378	280,909	5,200	58,630	20,821	422,938
From U.S.	73,011	133,683	70,139	187,382	13,894	478,109
	<u>130,389</u>	<u>414,592</u>	<u>75,339</u>	<u>246,012</u>	<u>34,715</u>	<u>901,047</u>
1932 To U.S.	46,053	175,821	2,953	51,584	17,784	294,195
From U.S.	55,031	109,389	52,259	103,064	7,155	326,898
	<u>101,084</u>	<u>285,210</u>	<u>55,212</u>	<u>154,648</u>	<u>24,939</u>	<u>621,093</u>
1933 To U.S.	83,877	187,904	7,768	40,586	19,178	339,313
From U.S.	52,659	105,626	56,978	88,946	6,510	310,719
	<u>136,536</u>	<u>293,530</u>	<u>64,746</u>	<u>129,532</u>	<u>25,688</u>	<u>650,032</u>
1934 To U.S.	105,948	183,936	9,534	45,838	24,024	369,280
From U.S.	62,073	131,738	122,911	98,254	13,645	428,621
	<u>168,021</u>	<u>315,674</u>	<u>132,445</u>	<u>144,092</u>	<u>37,669</u>	<u>797,901</u>

\* Exclusive of G.N. interchanges through Noyes.

there to enter the field in competition with the Canadian Pacific. Its beginnings in Manitoba in 1896 took substance in 1901, under the newly adopted name of the Canadian Northern Railway, through the taking over of the lines which the Province of Manitoba had leased from the Northern Pacific.<sup>13</sup>

Thereafter it grew apace until in 1915 its network of branches had spread into the neighboring provinces of Saskatchewan and Alberta, its outlet to the East through the forbidding Laurentian Shield had reached the populous regions of Ontario and Quebec and beyond, and its outlet to the West had surmounted the Rockies and had come to an end at Vancouver on the Pacific.

13. See p. 125, *supra*.

During this period of expansion an effort was made by Sir Wilfrid Laurier, in 1902-3, to bring together this system in the Northwest and the Grand Trunk system with its network of feeders in the East, so that each might act as a complement of the other and thereby avoid a duplication of lines and branches for the collection and distribution of traffic. This failing, the Grand Trunk, through its subsidiary the Grand Trunk Pacific Railway, under the direction of Charles M. Hays, proceeded in 1906 to build from Winnipeg to Prince Rupert on the Pacific, and the Dominion Government in 1905 to build from Winnipeg across the dread Laurentian Shield to Quebec and thence to a junction at Moncton with the Intercolonial Railway terminating at Halifax. In 1915 the last spike was driven in this third transcontinental line stretching from coast to coast, which in the Northwest was handicapped by an inadequate collecting system corresponding to the paucity of feeders from which its rival, the Canadian Northern, suffered in the East. The crisis which followed, calling for the taking over by the Dominion Government of the two systems with their losing ventures and financial obligations on an enormous scale, cost the people of Canada dearly for the competition in transportation which they had fostered.

In the building of the Canadian Northern easterly from Winnipeg in 1901 it was found desirable to pass south of the Lake of the Woods under the name of the Minnesota & Manitoba Railroad, thus involving the passage of this transcontinental route for 43.7 miles through the territory of the United States from a point on the border between Hickey, Manitoba, and Warroad, Minnesota, to the crossing of the Rainy River between Baudette, Minnesota, and Rainy River, Ontario. East of these gateways the branch of the Canadian National Railways known as the Duluth, Winnipeg & Pacific Railway crosses the border between Fort Frances, Ontario and Ranier, Minnesota, on its way to Duluth, Minnesota. The portion of this line in the United States, built across the border in 1907, now aggregates 176.5 miles in length, of which 169.1 miles are owned and 7.4 miles are operated under trackage rights.

At Northgate, on the border between Saskatchewan and North Dakota, the branch of the Canadian National Railways, built southward from Regina, Saskatchewan, in 1913, joins the branch of the Great Northern leading from there to Berthold, North Dakota, on

its main line just west of Minot, North Dakota. No other point of contact is made with American carriers except in connection with the system's steamship line between Prince Rupert, British Columbia, and points in the State of Washington and in Alaska.

In the subjoined table will be found the approximate number of tons interchanged at the four gateways in the years 1929 to 1934, inclusive:<sup>14</sup>

TABLE 28

*Canadian National Tonnages through Northwestern Gateways,  
1929 to 1934*

	<i>Hickey, Man.— Warroad, Minn.</i>	<i>Rainy River, Ont.— Baudette, Minn.</i>	<i>Northgate, N.D.</i>	<i>Fort Frances, Ont.— Ranier, Minn.*</i>
1929 To U.S.	.....	.....	.....	665,415
From U.S.	.....	.....	.....	189,090
	.....	.....	.....	854,505
1930 To U.S.	.....	.....	.....	558,899
From U.S.	.....	.....	.....	123,706
	.....	.....	.....	682,605
1931 To U.S.	.....	.....	.....	373,581
From U.S.	.....	.....	.....	69,718
	.....	.....	.....	443,299
1932 To U.S.	.....	.....	.....	204,724
From U.S.	.....	.....	.....	41,932
	.....	.....	.....	246,656
1933 To U.S.	.....	.....	100	230,857
From U.S.	.....	.....	159,285†	40,678
	3,400,000‡	3,400,000‡	159,385	271,535
1934 To U.S.	.....	.....	.....	234,391
From U.S.	.....	.....	.....	69,342
	.....	.....	.....	303,733

\* Commodities from the United States to Canada are mainly fruit and vegetables, coal, oil, gasoline, machinery, and merchandise; and from Canada to the United States, fish and forest products.

† Principally crude oil for Regina.

‡ Roughly approximate figures taken from the freight-traffic-density diagram accompanying report of the Royal Commission to Inquire into Railways and Transportation in Canada, 1931-32, reduced as indicated by the carrier for the year 1933. It is assumed that the tonnages shown actually crossed the border.

14. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.



## SUMMARY—NORTHWESTERN GATEWAYS

The four railway systems having direct contact with each other along the border in the Northwestern Region in 1935 operated to or through 19 different gateways, at which 6 are the points of connection of the 2 Canadian carriers with 5,356.3 miles<sup>15</sup> of line operated by them or in their interest in the United States, and 13 are the points of connection of the 2 American systems with 396.2 miles of line operated by them or in their interest in Canada. The situation is shown in detail in Table 29.<sup>16</sup>

For the purpose of illustrating the relative importance of these gateways, the approximate tonnages passed through them in the year 1933 (unless otherwise specified in the preceding text) are set forth in Table 30.<sup>17</sup> As will be noted in this table, the combined cross-border north and south movement in 1933 was the heavier in the direction of the United States.

The weighty east-and-west movement of the Canadian National Railways across the northern tip of Minnesota is merely one of convenience in so far as the use of foreign soil is concerned, just as in the case of the similar movement of Canadian Pacific transcontinental traffic across the State of Maine and that of the New York Central, Wabash, and Pere Marquette railways across the peninsula of Ontario. As to the falling off in volume of cross-border business as a result of the depression, the effect was even more severe than in the East, as the percentage was largely in excess of 50 per cent.

The mileages of railways operated in the Northwestern Region of the United States in 1933 were as shown in Table 31.<sup>18</sup>

15. 5,249.1 miles excluding duplications, etc.

16. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; also *Statistics of Steam Railways of Canada, 1934*. For detail data for 1933, see p. 20, *supra*.

17. Pp. 132, 137 and 139, *supra*.

18. *Statistics of Railways in the United States, 1933*, pp. s-2, 106-107, 172, 186. The Northwestern Region comprises the section adjoining Canada lying west of the Great Lakes Region, north of a line from Chicago to Omaha, and thence to Portland, Oregon, and by the Columbia River to the Pacific, this territory having been thus defined by the Interstate Commerce Commission.

TABLE 29

*Northwestern Gateways and Cross-Border Mileages in 1935*

Railway systems	Gateways		Operated mileages beyond the border	
	In United States	In Canada	Canadian holdings in the U.S.	American holdings in Canada
N.P. Ry.	Sumas, Wash.*	Huntingdon, B.C.	..	..
	Pembina, N.D.	Emerson Jc., Man.	..	75.7
G.N. Ry.	Noyes, Minn.*	Emerson, Man.	..	
	Neche, N.D.*	Gretna, Man.	..	..
	Walhalla, N.D.	Haskett, Man.	..	15.2
	St. John, N.D.	Bannerman, Man.	..	69.5
	Northgate, N.D.*	Northgate, Sask.	..	..
	Sweetgrass, Mont.*	Coutts, Alta.	..	..
	Gateway, Mont.	Newgate, B.C.	..	58.3
	Boundary, Wash.	Waneta, B.C.	..	60.9
	Laurier, Wash.	Grand Forks, B.C.	..	121.6
	Danville, Wash.	Grand Forks, B.C.	..	
	Curlew, Wash.†	Midway, B.C.	..	
	Molson, Wash.†	Midway, B.C.	..	
	Chopaka, Wash.	Similkameen, B.C.	..	
	Blaine, Wash.	White Rock, B.C.	..	..
			..	396.2
C.P. Ry.	Noyes, Minn.	Emerson, Man.	4,972.5	..
	Portal, N.D.	No. Portal, Sask.		..
	Neche, N.D.	Gretna, Man.	..	..
	Sweetgrass, Mont.	Coutts, Alta.	..	..
	Sumas, Wash.	Huntingdon, B.C.	..	..
	Eastport, Idaho	Kingsgate, B.C.	168.6	..
			5,136.1†	
C.N. Rys.	Warroad, Minn.	Hickey, Man.	43.7	..
	Baudette, Minn.	Rainy River, Ont.		..
	Ranier, Minn.	Fort Frances, Ont.	176.5	..
	Northgate, N.D.	Northgate, Sask.	..	..
			220.2	
Total existing cross-border mileage served through 19 different gateways			5,856.8§	396.2

\* Also appearing under Canadian listings.

† Abandoned February 28, 1935, thus excluding 28.9 miles from the showing on p. 52 of *Statistics of Steam Railways of Canada, 1933*, in which year the Great Northern Railway mileage in Canada, exclusive of the Winnipeg entrance held jointly with the Northern Pacific Railway, was 349.4; and the total American holdings in Canada, here listed, 425.1 miles.

‡ See footnote, p. 135, *supra*. Excluding duplications, etc., this becomes 5,028.9 miles.

§ Excluding duplications, etc., this becomes 5,249.1 miles.

TABLE 30

*Summarized Tonnage Interchanges through Northwestern Gateways in 1933*

Gateways (U.S. stations)	Interchanging railway systems	Tonnages interchanged		
		From Canada to the U.S.	From the U.S. to Canada	Total
Portal, N.D.	C.P. and "Soo" (C.P.) Rys.	187,904	105,626	293,530
Ranier, Minn.	C.N. Rys.	230,857	40,678	271,535
Noyes, Minn.	G.N., C.P. and "Soo" (C.P.) Rys.	97,802*	69,201*	167,003
Northgate, N.D.	G.N. and C.N. Rys.	100	159,285	159,385
Laurier, Wash.	G.N. Ry.	109,925	25,791	135,716
Danville, Wash.				
Curlew, Wash.				
Molson, Wash.				
Chopaka, Wash.				
Blaine, Wash.				
Eastport, Idaho	C.P. Ry.	40,586	88,946	129,532
Sweetgrass, Mont.	G.N. and C.P. Rys.	7,768	56,978	64,746
Pembina, N.D.	N.P.	7,193	39,571	46,764
Sumas, Wash.	N.P. and C.P. Rys., <i>et al.</i>	33,832	11,600	45,432
Boundary, Wash.	G.N. Ry.	32,592	983	33,575
Walhalla, N.D.	G.N. Ry.	18,792	728	19,520
St. John, N.D.				
Neché, N.D.	G.N. and C.P. Rys.	....	....	....
Gateway, Mont.	G.N. Ry.	3,786	13	3,799
Total, north and south movement		771,137	599,400	1,370,537
Warroad, Minn.	C.N. Rys.	Cross-Minnesota east-and-west movement		
Baudette, Minn.	C.N. Rys.			
Total at 21 different gateways				8,170,537

\* Estimated.

† Roughly approximate.

As of the year 1933, therefore, there are in all 21 gateways in the portion of the border that extends from the western limits of the Great Lakes basin to the Pacific. Through these the 43,081 miles of Canadian railways have access to 5,316 miles operated by them or in their interest in the Northwestern Region of the United States and to an additional 14,988 miles belonging to American carriers in that region, a total of 20,304 miles on the south side of the border with which the Canadian carriers on the north have direct relations. Through traffic arrangements the Canadian carriers have indirect relations with another group of American carriers in the Northwestern Region embracing 30,227 miles. Summed up, the Canadian carriers through the 21 gateways maintain relations, direct and indi-



TABLE 31

*Operated Railway Mileages in Northwestern Region in 1933*

	<i>Miles</i>	
American roads with border contacts		
Northern Pacific Railway (exclusive of mileage in Canada)	6,967	
Great Northern Railway (exclusive of mileage in Canada)	8,021	
	—	14,988
Canadian lines in the United States		
Canadian Pacific Railway	5,095	
Canadian National Railways	221	
	—	5,316*
Total mileage of railways directly connected with the border		20,304
Roads indirectly connected with border gateways		
Chicago & Northwestern system	10,144	
Chicago Great Western Railroad	1,519	
Chicago, Milwaukee, St. Paul & Pacific Railroad	11,249	
Minneapolis & St. Louis Railroad	1,627	
Union Pacific system (Oregon-Washington R.R. & Navigation Co.)	2,304	
Others	3,384	
	—	30,227
Grand total (all classes)		50,531†

\* Average for the year 1933. The corresponding figure as of the end of the year 1934 was 5,356 miles, per data furnished by the carriers (see p. 141, *supra*).

† Includes duplications where Canadian lines have trackage rights over American railways and over each other.

rect, with the 50,531 miles of line in the Northwestern Region, of which 5,316 miles are operated by them or in their interest. The 10 millions of Canadians in this manner are placed in intimate contact with between 14 and 15 million Americans residing in the 11 states of Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Montana, Wyoming, Idaho, Washington, and Oregon. The Canadian National Railways system, like the Canadian Pacific across the State of Maine, and the New York Central, Wabash, and Pere Marquette railways across the peninsula of Ontario, is enabled to link together its transcontinental route by means of the stretch over foreign soil in northern Minnesota. The Canadian National, by means of traffic arrangements over other lines, is the possessor of an alternate transcontinental route via Duluth, Chicago, and Detroit. The Canadian Pacific, too, through its control of the Minneapolis, St. Paul & Sault Ste. Marie Railway is in possession of two alternate routes between the East and West on the south side of the Great

Lakes, one via the "Soo" and the other via Chicago. The carriers on both sides of the border, in the manner that has been described, are in a position jointly to participate in north and south movements between the two countries to their mutual advantage. The coast cities of Vancouver, Portland, Seattle, and Tacoma, and the interior cities of Edmonton, Calgary, Saskatoon, Regina, Winnipeg, Spokane, Great Falls, and the Twin Cities, together with their vast hinterlands, enjoy the benefits of the rivalry of the Northwestern railways of both countries just as effectively as if there were no border to separate them politically.

## CHAPTER VII

# INTERRELATED MILEAGES AND BORDER ACTIVITIES

IN viewing the historical development and relative importance of the fifty gateways along the four thousand miles of border, sight must not be lost of the part they play collectively in the binding together of the railways of both countries. After all, the general adoption of joint through rates by the several railways of the continent has made them one in so far as the interchange of traffic is concerned. It is to that end that the gateways really have served as eyelets in the lacing process. The subject, therefore, should be treated as international in its scope, rather than as one dealing only with the territories immediately in contact along the border. With it should go some consideration of the means and measures employed in the tying together of the entire railway system of the United States with that of Canada.

### CANADIAN MILEAGES

Of the 43,081 miles of operated lines within the limits of Canada, 38,645 are embraced within the scope of the Canadian National and Canadian Pacific railways and 1,556<sup>1</sup> are held by or in the interest of American systems that extend across the border, thus making a total of 40,201 miles, or more than 93 per cent of the entire mileage of the country, which enjoys direct communication with the railways of the United States by means of the fifty border gateways. Under a single management each of the two principal systems spans the continent from ocean to ocean, and, in the case of one of them, extends by water around the globe. These figures are set forth in some detail in Table 32.<sup>2</sup>

### UNITED STATES MILEAGES

In the United States the situation is much more involved. In contrast with 40 companies operating 43,081 miles in Canada there are

1. See p. 20, *supra*.

2. *Statistics of Steam Railways of Canada, 1933*, pp. 52-53, 59. Later



TABLE 32

*Railway Mileages in Canada*

	<i>Number of companies</i>	<i>Miles of road</i>	
		<i>Operated</i>	<i>Owned and leased</i>
American holdings			
Great Northern and Northern Pacific, jointly (including G.N. connection at Emerson, Man.)	1	75.74	6.40
Great Northern	4	349.39	322.49
New York Central (exclusive of 1.81 miles in U.S.)	4	502.06	484.22
Delaware & Hudson	1	41.74	27.15
Pere Marquette	1	336.69	198.63
Wabash	1	245.40	....
Maine Central	1	5.10	5.10
Bangor & Aroostook (exclusive of 0.08 mile in U.S.)	1	0.28	0.28
	<hr/> 14	<hr/> 1,556.40*	<hr/> 1,044.27
Canadian holdings			
Canadian National (exclusive of 71.87 miles in U.S.)	3	21,895.04	21,727.26
Canadian Pacific (exclusive of 267.6 miles in U.S.)	1	16,750.10	16,359.41
Others	22	2,879.00	2,865.67
	<hr/> 26	<hr/> 41,524.14	<hr/> 40,952.34
Total	40	43,080.54	41,996.61

\* Further data furnished by the Dominion Bureau of Statistics will be found in Appendix G, in which are included companies having no direct relation to the railway system on the other side of the border.

data as of 1935, furnished by the carriers and shown on pp. 72, 117, 141, *supra*, reflect changes in road mileage brought about by the abandonment of service on some of the American holdings, and the inclusion of Pennsylvania Railroad trackage rights over the Canadian National Railways at Fort Erie, Ontario, not reported in the Dominion statistics, thus:

	Northeastern Region	Great Lakes Region	Northwestern Region	Total
Great Northern and Northern Pacific, jointly (including G.N. connection at Emerson, Man.)	..	..	75.7	75.7
Great Northern	..	..	320.5	320.5
New York Central	..	500.6	..	500.6
Delaware & Hudson	..	41.7	..	41.7
Pere Marquette	..	336.2	..	336.2
Wabash	..	243.6	..	243.6
Maine Central	5.1	..	..	5.1
Bangor & Aroostook	..	..	..	..
(Van Buren Bridge Co.)	0.3	..	..	0.3
Pennsylvania Railroad	..	2.5	..	2.5
<b>Total</b>	<u>5.4</u>	<u>1,124.6</u>	<u>396.2</u>	<u>1,526.2</u>

700 companies operating 256,881 miles,<sup>3</sup> of which none extends under a single management from coast to coast. However, the control of the railways of the United States, through banking influences, is unified in a financial sense, and therefore in respect of a common policy, to a much greater extent than is to be inferred from this diversity of corporate ownership.

In the narrower sense 14 systems with 56,564 miles of line under American control and two systems with 7,312 miles under Canadian control have direct contact at the border gateways with the railway systems of Canada, thus making a total of 63,876 miles of operated line in the United States under sixteen separate managements which interchange traffic with the railways of the neighbor on the north. If to these mileages are added those of other roads with which the border roads join in the establishment of through rates in the Eastern District and Northwestern Region more intimately related to border conditions, the total becomes 111,953 miles. If to them is also added those of roads in the Central Western and Southwestern Regions of the Western District, in which the average conditions are similar to those along the western section of the border, the total for all railways in the Eastern and Western Districts becomes 205,986 miles. The characteristics of the Southern District, with its 50,895 miles, differ quite materially from those of the border districts, as will be shown in the chapter that follows, but its traffic is closely linked with the Canadian systems by means of joint through rates.

Table 33, showing average mileages operated in the United States, made from data contained in the Interstate Commerce Commission's *Statistics of Railways in the United States*, for the year 1933, gives the figures in considerable detail.<sup>4</sup>

3. Including the 32-mile electric line of the Canadian Pacific Railway in Maine.

4. See p. 20, *supra*, in respect of American holdings in 1933; also pp. 74, 120, 143, *supra*. More recent information, as of 1935, shown in detail on pp. 72, 117, 141, *supra*, gives the Canadian mileages in the United States, thus:

	<i>New England Region</i>	<i>Great Lakes and Central Eastern Regions</i>	<i>Northwestern Region</i>	<i>Total</i>
Canadian National Railways (including main line in Minnesota)	607	1,031	220	1,858
Canadian Pacific Railway (including electric line in Maine)	357	0	5,136	5,493
Total	964	1,031	5,356	7,351

TABLE 33

*Railway Mileages in the United States*

		<i>Miles of road*</i>	
<i>Eastern District</i>		<i>Operated</i>	<i>Owned</i>
New England Region			
Canadian holdings			
Canadian National	607		
Canadian Pacific	357		
	<u>964</u>		
American holdings	6,713		
	<u>7,677</u>		
Great Lakes Region			
Canadian holdings			
Canadian National	1,032		
Canadian Pacific	0		
	<u>1,032</u>		
American holdings	26,287		
	<u>27,319</u>		
Central Eastern Region			
American holdings		26,426	
Total, Eastern District			
Canadian holdings	1,996		
American holdings	59,426		
	<u>61,422</u>		57,995
<i>Western District</i>			
Northwestern Region			
Canadian holdings			
Canadian National	221		
Canadian Pacific	5,095		
	<u>5,316</u>		
American holdings	45,215		
	<u>50,531</u>		
Central Western and Southwestern regions			
American holdings		94,033	
Total, Western District			
Canadian holdings	5,316		
American holdings	139,248		
	<u>144,564</u>		138,728
<i>Southern District</i>			
American holdings		50,895	49,012
<i>Grand Total</i>			
Canadian holdings			
Canadian National	1,860		
Canadian Pacific	5,452		
	<u>7,312†</u>		
American holdings	249,569		
	<u>256,881</u>		245,735

\* Includes 32 miles of a freight-collecting electric line owned by Canadian Pacific Railway in Maine.

† Reference to further data will be found in footnote 4.



## CONTINENTAL MILEAGES

Combining the mileages of the two countries, tied together as they are by means of joint through rates, the results are as follows for the year 1933:

	<i>Miles of road</i>	
	<i>Operated</i>	<i>Owned</i>
Railways in the United States		
American holdings	249,569	
Canadian holdings	7,312	
Total	256,881	245,735
Railways in Canada		
Canadian holdings	41,525	
American holdings	1,556	
	43,081	41,997
Grand total	299,962	287,732

In total, therefore, the operated railway mileage of the two countries is 299,962 miles—substantially 300,000 miles—of which the Canadian proportion is 14.4 per cent and that of the United States 85.6 per cent.

It is also worthy of note, as heretofore pointed out, that the length of line operated by or in the interest of Canadian lines within the limits of the United States, 7,312 miles, is nearly five times that operated by and in the interest of American lines in Canada, 1,556 miles.<sup>5</sup>

## COMPARATIVE GROWTH AND DENSITY OF MILEAGE

Table 34, on page 150, of comparative population per mile of railway in the two countries, by decades for nearly a century, is of interest in bringing out the fact that Canada, while sluggish in respect of railway expansion in the earlier years, has gradually passed the United States until it is now far in the lead.

From this it is apparent that by the year 1890 the two countries in respect of railway mileage in its relation to population were practically on a par. A mile of railway on the average was then at the service of somewhat less than 400 inhabitants on either side of the border. Thereafter, the expansion of railways in the United States did not keep pace with the increase of population, whereas in Canada it far exceeded the growth in settlement until in 1931 a mile of rail-

5. See p. 20, *supra*; also footnote 9, p. 157, *infra*.

TABLE 34

*Comparative Population per Mile of Railway*

Canada*				United States			
Year	Population	Railway operated mileage	Popula- tion per mile	Year	Population†	Railway operated mileage‡	Popula- tion per mile
1840	1,535,000	16	95,938	1840	17,069,000	2,818	6,057
1850	2,376,000	66§	36,000	1850	23,192,000	9,021	2,571
1860	3,171,000	2,065	1,536	1860	31,443,000	30,626	1,027
1871	3,689,000	2,695	1,369	1870	38,558,000	52,922	729
1881	4,325,000	7,331	590	1880	50,156,000	93,296	538
1891	4,833,000	13,838	349	1890	62,948,000	166,702	378
1901	5,371,000	18,140	296	1900	75,995,000	192,556	394
1911	7,207,000	25,400	284	1910	91,972,000	240,831	382
1921	8,788,000	39,192	224	1920	105,711,000	259,941	407
1931	10,377,000	42,282	245	1930	122,775,000	260,440	471

\* *The Canada Year Book, 1934-35*, except the figures for population prior to 1871, which are taken from the *St. Lawrence Waterway Project (1929)*, by George Washington Stephens.

† *Abstract of the Fifteenth Census of the United States, 1930*.

‡ Interstate Commerce Commission, Bureau of Statistics, letter dated January 11, 1936. For 1900 and 1910 the figures are for June 30 instead of the end of the year. See Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

§ See p. 37, *supra*.

way took care of the necessities of 245 inhabitants. This was in contrast with nearly twice that number, 471, in the United States in the year 1930. As explained in Chapter I,<sup>6</sup> this disproportion was even greater in the regions that had a direct relationship to each other along the border, where the railway mileage per capita in Canada in 1933 was nearly two and a half times as great as in the United States.

Stated differently, as has been remarked in previous chapters, with a population twelve times as great, the United States now has but six times as much railway mileage as Canada. The additional burden thus placed on the cost of transportation in the Dominion, by reason of the excess capital investment and expenses of operation incident to this superabundance of railway mileage, has had a profound effect on governmental policies which in turn have had repercussions on the American side of the border. Particular reference to this will be made in succeeding chapters (IX and X).

6. P. 23, *supra*.

## TRACK GAUGES

As has been already explained in some detail, no question has had a more important bearing on the railway interrelations of Canada and the United States than the width of track in its relation to the interchangeability of locomotives and cars. The well-known "battle of the gauges" between the adherents of Stephenson and Brunel in Great Britain had its echo in Canada and the United States where its unhappy results continued to afflict the people of the two countries for fifty years.

In the beginning the 4' 8½" Stephenson or "standard gauge" was adopted in both Canada and the neighboring parts of the United States; but differences soon developed owing to a variety of causes. In the southern states of the Union the gauge of the first locomotive imported from abroad, 5 feet, led to the extended use of that width south of the Potomac and Ohio rivers and east of the Mississippi until, after the lapse of more than a half a century, the entire system was altered to the standard gauge. In the northeastern states and western states the standard gauge remained in force with several notable exceptions. In Maine a departure was early made in favor of a 5' 6" gauge on the line sponsored by John A. Poor for the joining of Montreal and Halifax via Portland, Maine. It was this action, motivated in some degree by the earlier adoption of a wide gauge on the Erie Railroad between New York and Dunkirk on Lake Erie, that led the Canadian provinces to adopt and continue the use of the 5' 6" gauge on the Grand Trunk and Great Western railways in the early 1850's, instead of the standard gauge that previously had been put in use on the Champlain & St. Lawrence and Montreal & New York railroads between Montreal and the border, the St. Lawrence & Industrie Railroad, and the St. Lawrence & Ottawa Railway between Ottawa and the border. Thereafter the 5' 6" gauge, except in the case of the narrow-gauge lines of comparative insignificance, was employed in the building of practically all of the Canadian railways, until the Canada Southern was constructed with the standard gauge between the Niagara and Detroit frontiers in the early 1870's and the general change throughout Canada was made from the 5' 6" to the standard 4' 8½" gauge in the middle years of the same decade. In the instance of the Erie Railroad and its connections as far west as Buffalo, New York, and on the north to Albany, New York, a 6' 0"



gauge was in use until 1876, and the same was true on the Delaware, Lackawanna & Western Railroad to Buffalo. In many such instances where a "broad gauge" was adopted, a third rail was added so that standard equipment might pass from one system to another without the necessity for a break of bulk at the points of connection. In other instances cumbersome means were in vogue for the transfer of car bodies from broad-gauge to standard-gauge trucks or for the changing of the wheel gauge on the car axles.

These differences in gauge accomplished their intended purpose most effectively. The free interchange of traffic between connecting or adjoining systems was prevented or hindered, cars at least in some degree were retained on their parent lines, passengers were provided with "healthful" exercise in walking from one train to another, local cartage and business interests at points of transfer were given unholy opportunities for making money from a situation which required a break of bulk of freight and a stopover on the part of the travelers by rail.

But the corresponding injury in the way of delays and expense to the carriers and the public was enormous. Routes with differing gauges, like that of the Vermont Central and Grand Trunk via Canada, suffered grievously in competition with standard-gauge American routes such as that of the New York Central between Boston and other New England points and the great centers of the West including Chicago, Cincinnati, and St. Louis. Carriers like the Great Western Railway of Canada were burdened with the cost of laying a third rail in order that American standard-gauge equipment might engage in unhindered movements between the East and West via Canada. The public of both countries in the end paid the price directly and indirectly wrung from them for this silly interference with the free flow of traffic by rail through the border gateways and elsewhere. Its removal in Canada in the 1870's came in time to save the later expansion of the railways of that country from a grave handicap in their relations with the railways of the United States. As in England, the battle of the gauges finally resulted in victory for the one that had the earlier start.

#### NUMBER OF CROSS-BORDER MAIN TRACKS

At nearly all of the border gateways the crossing from one coun-

try to the other is by means of a single main track. The exceptions are between Suspension Bridge, New York, and Niagara Falls, Ontario, where the Canadian National and Michigan Central bridges over the Niagara Gorge are each double track, and between Detroit, Michigan, and Windsor, Ontario, where the Michigan Central tunnel beneath the Detroit River likewise is double track. It should be added that on Lake Ontario between Charlotte, New York, and Cobourg, Ontario, on Lake Erie between Ashtabula, Ohio, and Port Burwell, Ontario, on Lakes Huron and Michigan between Depot Harbor, Ontario, and Chicago and Milwaukee, and on the Detroit River between Detroit and Windsor car ferries or steamers are the means employed for bridging the water gap along the border.

### CROSS-BORDER TONNAGES

In preceding pages the volume and character of freight traffic passing the border in recent years have been set forth in considerable detail, based on such information as has been found to be available from various sources. While far from exact they are believed to be sufficiently accurate to indicate the relative importance of the gateways and the nature of interchanges of goods between the railways of the two countries. In summarized form the tonnages thus exchanged in 1933 (with the exceptions noted in the preceding text) are given in Table 35.

From this it will be seen that in the year in question, at a time when business at the gateways was but half as active as in 1929, the volume of traffic interchanged at the 4,000-mile border, through the 50 gateways, amounted in round figures to 37 million tons. Of this an unknown proportion was of the overhead variety—moving east and west under bond between points in each country through the territory of the other. Instances of this kind are tonnages originating in Canada and moved across the states of Maine and Minnesota to destinations in the Dominion, as well as tonnages originating in the United States and moved across the peninsula of Ontario to destinations in the Union. If from the available evidence it is fair to assume that the traffic thus crossing the border twice amounted in 1933 to say 14 million tons, making a total of 28 million tons counted each time they passed through a border gateway, the remaining 9 million tons represents the part of the total of 37 million

TABLE 35

*Summarized Cross-Border Tonnages in 1933*

<i>Location</i>	<i>Number of gateways</i>	<i>Tonnages</i>
Northeastern Region (p. 73, <i>supra</i> )		
Maine-New Brunswick	7	1,187,468
Maine-Quebec	1	900,000
Vermont-Quebec (including C.N. interchanges at Rouses Point, N.Y.)	8	3,553,863
	<hr/> 16*	<hr/> 5,641,331
Great Lakes Region (p. 118, <i>supra</i> )		
Northern New York-Ontario† (including D. & H. cross-border traffic at Rouses Point)	6	1,340,631
Western New York-Ontario‡	3	10,909,457
Michigan-Ontario§	4	10,884,544
	<hr/> 13	<hr/> 23,134,632
Northwestern Region (p. 142, <i>supra</i> )		
Minnesota-Ontario-Manitoba	4	7,238,538
North Dakota-Manitoba-Saskatchewan	6	519,199
Montana-Saskatchewan-Alberta	2	68,545
Idaho-British Columbia	1	129,532
Washington-British Columbia	8	214,723
	<hr/> 21	<hr/> 8,170,537
Total	<hr/> 50	<hr/> 36,946,500

\* Rouses Point is listed as a Great Lakes Region gateway and therefore is not numbered among those in the Northeastern Region, although a portion of its traffic belongs to the Northeastern Region.

† Including Charlotte, New York-Cobourg, Ontario, car ferry.

‡ Including Ashtabula, Ohio-Port Burwell, Ontario, car ferry.

§ Including Depot Harbor, Ontario-Chicago steamship service.

|| Fifty-six crossings at these 50 gateways (see footnote, p. 18-19, *supra*).

tons in that year which may be ascribed to the so-called north-and-south movement from one country to the other and crossing the border only once in the journey between points of origin and destination.<sup>7</sup>

7. Assuming that 10 million tons of freight passing through the peninsula of Ontario crossed the border twice, and that the same double crossing occurred in the instance of 4 million tons passing through Minnesota and Maine, the volume of freight thus affecting the border if counted but once becomes 37 million — 14 million = 23 million, or approximately one third of the 73,643,826 tons of revenue and non-revenue freight handled on the Canadian railways in 1933 (see pp. 73, 118-119, 142, *supra*, and pp. 21 and 185 of *Statistics of Steam Railways of Canada, 1933*).



Whichever way the subject is considered, whether from the standpoint of east-and-west traffic in which the rail carriers of each country enjoy the hospitality of the other, or from the viewpoint of a north-and-south exchange of goods, the fact clearly stands forth that the combined railway mileage of the United States and Canada, interconnected as it is through the border gateways, is a factor of enormous magnitude in the daily life of the two peoples.

### CROSS-BORDER OPERATIONS

Yards and repair facilities on one side of the border or the other, usually on the American side, are provided for the interchange of cars and the change of power and for the maintenance of equipment. In some instances, as at the International Bridge between Buffalo (Black Rock) and Fort Erie (Bridgeburg), Ontario, the locomotives of the terminating carrier on either side are employed to switch cars to the neighboring freight yards in the other country. In the case of passenger trains it is usual for them to move freely from one country to the other, either with the same locomotives and crews, with or without a change of status in respect of corporate control, or with a change of motive power and crews such as are usually made at division points in both countries.

Locomotive fuel mined in one country and used in connection with cross-border operation in the other is subject to customs duties, and the same is true of manufactured materials for repair purposes. But in this some latitude is permitted on short train runs, and exemption from the payment of duties is permitted on train supplies of a miscellaneous character. Equipment in cross-border operation is free from the payment of duty but, of course, this does not apply to purchases of locomotives and cars manufactured in one country and used exclusively in the other.<sup>8</sup>

8. The following quotation from *Bulletin No. 39*, of The Railway and Locomotive Historical Society, March, 1936, is interesting in this connection: "With the completion of the Rouses Point extension [of the Champlain & St. Lawrence Railroad in 1851], the Company intended to run, in connection with the Vermont and Canada Railroad, through cars to Boston and New York and the Canadian Government was requested to allow the use of foreign rolling stock on Canadian lines provided they were used in regular line service. The amending Act of 1852 authorized the Champlain and St. Lawrence Railroad to cross, intersect, join and unite with any other railroad and

## BORDER INSPECTIONS AND MOVEMENTS IN BOND

Customs regulations made in accordance with law, and the manner in which they have been and are carried out, have had a vital influence on the trade relations of the two countries. As far back as 1799 Congress provided that freight imported into the United States for prompt delivery beyond its limits, and vice versa, might be transported in unbroken packages or lots under seal, from point of entry to place of exit in its territory, without the payment of duties. This had to do with movements by water, then in vogue, in connection with portages or carrying places between adjoining streams within the limits of the United States. In 1845 this privilege in respect of shipments into Canada was reaffirmed and expanded by Congress, and became an important element in the cultivation of traffic over channels of trade in the United States between ports in that country and Canadian destinations. The allowance of a drawback upon foreign merchandise thus moved in the original package, however, was substituted for the non-collection of duty.

Happy results in both countries are reported to have followed the enactment of this legislation, especially in an augmented trade in foreign exports to Canada from the ports of the United States during the long period when the St. Lawrence River was closed by ice and to a lesser degree in the other seasons of the year. In the Reciprocity Treaty of 1854 and in the warehousing act passed by Congress in the same year, provisions were made for reciprocal free rights of way for goods moving "in transit" under bond over neigh-

to enter into any agreement with any other railroad company, either in Canada or the United States, for the operation of joint through services, for the use of each other's rolling stock, and for the leasing of other lines by the Champlain and St. Lawrence or vice versa. It is further provided that any locomotive, tender, car or carriage of any foreign railroad company brought into Canada in pursuance of any such agreement, but remaining the property of such foreign company, and intended to pass regularly between this province and a foreign state, shall, for all purposes of the laws relative to Customs, be considered as carriages of travellers coming into this province with the intent of immediately leaving it again, and as such would be exempt from all Customs duties. A similar ruling was made by the American government and it is likely that this was the first international agreement of the kind and so far as Canada and the United States are concerned this rule is still in force."

boring foreign territory. Technically this was understood to apply only to movements via the St. Lawrence River and Canadian canals in American vessels, but in practice it became usual to convey merchandise from one point to another in the United States, over Canadian railways in locked cars accompanied by an American customs officer through its entire transit. It was this broadened conception of the intent of these provisions for the transit of foreign and domestic goods, first through the territory of one country then through the other and afterward back to their ultimate destination in the country in which they originated, that made possible the creation of the Canadian system of railways tapping the American markets, and the building of the American short-cuts across the peninsula of Ontario.<sup>9</sup>

By the Treaty of Washington in 1871 and through various regulations issued by both Governments from time to time, the age-old bonding privilege thus was confirmed and its exercise expanded and simplified, so that today freight under seal is enabled to pass by rail through the border gateways from one country to the other without the delays in transit that otherwise would be there incurred in the inspection of goods and the payment of duties.

In practice all outbound freight in bond is speedily inspected by the proper customs officers at the border gateway, the necessary papers viséd or prepared anew and seals affixed to the doors of carload shipments or to the enclosing cords of less-than-carload shipments. The inbound shipments under seal to Canada go direct to ports of entry in that country embracing practically every important commercial center, while those to the United States may go direct to the more important cities which are there designated as ports of delivery. In both instances the seals of the inbound shipments are inspected at the border. Unbonded shipments are accompanied by the necessary papers and the duties paid at the gateway by the consignees' agent or customs broker in the case of movements into the United States, and there or at the final destination in the case of movements into Canada. The large number of interior ports of entry in Canada

9. It is worthy of note that while 14.5 per cent of Canada's combined railway mileage in both countries is located in the United States, only six tenths of one per cent of that of the United States is located in Canada. See p. 149, *supra*.



makes the offering of these alternatives possible, although the selection of the latter entails the sealing of cars and packages. As far as possible, waybills and the necessary customs papers are forwarded so as to be in readiness for use promptly on the arrival of the cross-border shipments; to the same end the railway agent is frequently placed under bond in order that he may act as the customs broker in the making out of manifests or clearance papers and the payment of duties. Express shipments in general are handled in the same manner as freight, and in the case of mail such precautions are taken as will prevent any abuse of customs regulations. In all these measures it has been found that such short delays as here and there occur are, with few exceptions, unrestrictive of the free movement of traffic between the two countries.

Passengers and their baggage from one country to local points in the other are subjected to close inspection by immigration and customs officials who board the train in advance of the border crossing so as to cause the least possible inconvenience to travelers. Train crews in service between the countries are scrutinized by both immigration and customs officials to see that governmental regulations are not violated.

In brief it may be said, in so far as railway operation is concerned, that customs and immigration inspections at the border gateways cause short delays only, and none in general that hinder the free movement of bona fide travelers and property between the two countries. The frontier in this differs little from the boundaries between the states or the provinces themselves, or the division points on the railways where equipment is inspected, motive power changed, and trains made up anew. Further data bearing on this topic will be found in Appendix D, Border Restrictions.<sup>10</sup>

Of course, high tariff barriers do affect the volume of interchange traffic between the two countries, as dwelt upon in Appendix F, Cross-Border Hindrances Due to the Tariff and Currency Exchange Situation. The lowering of the tariff bars as a result of the Reciprocity Compact of 1935 will, it is believed, go far to promote an increasing international trade from which the interrelated railway network will reap a rich reward.<sup>11</sup>

10. P. 256, *infra*.

11. P. 265, *infra*.

## CHAPTER VIII

### BORDER STRUCTURES OF MAGNITUDE

SEPARATED as they are by lakes and rivers of the first magnitude along the eastern half of the frontier, the railways of the United States and Canada have from time to time been joined by bridges and tunnels which in the majority of instances stand at the forefront of the engineering accomplishments of man. The four cross-border single-track bridges in the valley of the St. Croix River between the Maine Central and Canadian Pacific lines are not of sufficient importance to deserve other than a passing notice, but the seven bridges and two subaqueous tunnels at the other crossings call for somewhat extended descriptions in the order of their completion. Among these the Victoria Bridge at Montreal has been included, even though separated from the border by a space of some forty-six miles, because of its outstanding importance in the opening and continuance of rail relations between the two countries.<sup>1</sup>

#### NIAGARA GORGE LOWER BRIDGE

It will be recalled that a portage railroad was opened in New York State between Niagara Falls and the Erie Canal at Lockport as early as 1838, thirteen years after the canal had been completed. This, as already mentioned, in 1852 became a link in the "great thoroughfare" made up of a succession of short roads which in the following year were combined under the name of the New York Cen-

1. The great bridge over the St. Lawrence at Quebec, completed in 1917 and formally opened in 1919, has not been included in this category, because of its primary importance as a link in the Canadian National transcontinental line terminating in the Maritime Provinces, rather than serving the purposes of railway interchange between the two countries. Neither have the bridges across the St. Lawrence at Lachine and Coteau been included, the first opened by the Canadian Pacific Railway in 1887 and rebuilt in 1912, and the second put in service by the Canada Atlantic Railway in 1890. They, too, have not been deemed to be of primary importance in border interchanges although the latter bridge is on the direct route between Depot Harbor, Ontario, and the Central Vermont Railway south of the border.

tral Railroad from the Niagara Frontier to Albany and thence to Boston by means of what later became the Boston & Albany Railroad, and to New York by means of the Hudson River Railroad. The abolition of the unnatural burden of canal tolls on railroad shipments in New York State in 1851 had led to this advanced step and had stimulated American interests to lend a hand in the completion of the Great Western Railway of Canada as an extension of the "great thoroughfare" across Ontario to a junction with the Michigan Central Railroad leading from Detroit to Chicago.

The chasm of the Niagara River, deep and wide at this point of interchange, stood in the way of a physical connection of the two parts of a route that meant so much to the people on both sides of the border. As early as 1846, through the efforts of the Honorable W. H. Merritt of St. Catharines, Ontario, charters for the building of a bridge across the gorge below the rapids had been obtained from the State of New York under the name of the Niagara Falls International Bridge Company, and from the Canadian Government under the name of the Niagara Falls Suspension Bridge Company. By virtue of these authorizations a light suspension-cable structure, with wooden towers and void of stiffening trusses, had been built by the well-known American engineer Charles Ellet and opened to foot and vehicular traffic in 1848. But the chasm still remained a formidable obstacle to the joining of the rails of the projected Great Western Railway of Canada with those of the New York Central on the other side. The need for a much stronger bridge adapted to railway purposes then becoming more and more evident, it fell to John A. Roebling, of Brooklyn Bridge fame, to conceive and develop plans for a single-track suspension structure with a clear span of eight hundred feet, which, amidst the plaudits of citizens of both countries, was brought to successful completion in readiness for the passage of the first train in March, 1855, and opened for regular service in May of that year. In it the results of theoretical research, in so far as the strength of materials was concerned, are claimed to have been applied more successfully than in any other bridge up to that time. Through the use of stiffening trusses the undue deflection of the bridge under the weight of moving railway trains was prevented; but, nevertheless, the prejudice long persisted, absurd as it was, that this type of bridge was not suited to this purpose. In an



historical sense and as a feat in engineering this work by Roebling is of lasting interest.

In 1877 the discovery of corrosion of the cables embedded in the anchorages led to the engagement of another American engineer of note, Leffert L. Buck, who planned and supervised the necessary repair work and the daring substitution under traffic of metal for wooden stiffening trusses. The result was that in 1880 the permissible live load on the bridge was increased by several hundred tons. Six years later, in 1886, the weathered stone towers, carrying the cables, were replaced by others of iron.

The radical change from the suspension-bridge type to a steel arch, in which a center hinge was omitted on the advice of Mr. Buck, was commenced in 1896, completed on August 27, 1897, and formally opened with appropriate ceremonies on September 24, 1897, after it had been tested in the previous July under the supervision of Joseph Hobson, Chief Engineer of the Grand Trunk Railway. Instead of the original single track, provision was made in the new structure for two tracks above with a vehicular roadway beneath them, flanked by a sidewalk on each side.

This notable structure, modernized in 1919 for what is termed Cooper's E-60 loading,<sup>2</sup> and conveyed to the newly named Niagara Lower Arch Bridge Company in 1930, has a central arch with a span of 550 feet, two end spans of 115 feet each, and two plate girders each 150 feet long, making the total length of the bridge from shore to shore 1,080 feet. The height of the tracks above the swirling waters of the Niagara is 245 feet; the rise of the central arch, 114 feet; the width of the railway floor, 32 feet; the width of the highway, 47½ feet; and the weight of metal in the bridge, 3,500 tons. It stands at the Suspension Bridge, New York-Niagara Falls, Ontario,

2. Two coupled locomotives per track, of which each has a leading axle load of 30,000 pounds and four driving axles spaced five feet center to center weighing 60,000 pounds per axle, followed by a uniformly distributed train load of 6,000 pounds per lineal foot. Special provision made for concentrated loads. Other Cooper's loadings will be mentioned in this chapter without further explanation of their meaning. The number following the letter E will indicate the proportionate loads carried. For example, in Cooper's E-40 loading, substitute the numbers 20,000, 40,000, and 4,000, respectively, for the numbers 30,000, 60,000, and 6,000, as given for the E-60 loading.

gateway as the means of connection between the Canadian National Railways and Wabash Railway on one side of the border, and the New York Central Lines, Erie Railroad, and Lehigh Valley Railroad on the other side, a worthy monument to the genius and skill of those responsible for its conception and adaptation to changing conditions during the past eighty years.<sup>3</sup>

### VICTORIA BRIDGE

The opening of the first railways leading from points on the St. Lawrence River opposite Montreal to Boston in 1851, and to St. Hyacinthe, Quebec, thirty miles away in 1848 and thence to Port-

3. Correspondence respecting Railway Interrelations of the United States and Canada. The genealogy, so to speak, of the bridge is set forth below:

1844. Plan of spanning the Niagara Gorge with a suspension bridge first took practical shape when suggested to the Honorable W. H. Merritt, of St. Catharines, Ontario, by a description of the Freiburg Suspension Bridge in a letter from a friend.

1846. The Niagara Falls International Bridge Company was incorporated under the Laws of New York, April 23; and The Niagara Falls Suspension Bridge Company was incorporated October 30 under Act 10 V. Chap. 112, Province of Canada, capital stock £125,000.

1849. The Niagara Falls Suspension Bridge Company, on May 30, under Act 12 V. Chap. 161, Province of Canada, was authorized to reduce its stock to £25,000 and directed to strengthen the bridge so as to be safe for the passage of railway trains upon the completion of the railways leading thereto.

1853. The Niagara Falls Suspension Bridge Company, on April 22, under Act 16 V. Chap. 110, Province of Canada, was authorized to increase its capital by £12,500.

1854. The Niagara Falls Suspension Bridge Company, on December 18, under Act 18 V. Chap. 37, Province of Canada, was authorized to increase its capital stock by £25,000 by creating an additional number of shares.

1875. Under Act 38 V. Chap. 72, Dominion of Canada, April 8, the agreements, dated October 1, 1853, January 18, 1872, and February 27, 1875, between the Niagara Falls International Bridge Company, the Niagara Falls Suspension Bridge Company, and the Great Western Railway Company, and also the agreement, dated March 20, 1875, between the Erie and Niagara Railway Company, the Canada Southern Railway Company, and the Great Western Railway Company were confirmed.

1894. The Niagara Falls Suspension Bridge Company, on July 23, under Act 57-58 V. Chap. 98, Dominion of Canada, was authorized to repair, strengthen, and enlarge its present bridge. Provision was made for the lay-

land in 1853, found the Canadian metropolis in an embarrassing position. In the open season it was dependent on ferry boats and barges for the transport of passengers and freight to and from the newly established railway termini on the southern shore, and in the closed season it was dependent for this purpose on sleighs. In both fall and spring the cross-river service, by either means, would be suspended for from one to three weeks. With the river closed to navigation for upward of a third of the year, Montreal was in sore straits in its competition for world trade with the more favored ports on the south. At all times the enforced break of bulk at the river's edge resulted in gross delay and undue expense. The promised improvement of trade with the United States, therefore, did not materialize, nor the benefits in the closed winter season which had been expected to accrue from a rail outlet to the American warm-water port of Portland.

In consequence of this serious situation the feeling deepened that something tangible should result from the suggestion made in 1846 by the Honorable John Young of Montreal that a bridge should be built across the river near that city, backed as it was by reports and plans submitted by eminent engineers between 1846 and 1853. The financing of the project by the newborn Grand Trunk Railway having been at last brought to a successful issue, active work upon its substructure was begun in 1854 by James Hodges for the contractors, Peto, Brassey and Betts, under the direction of the author of the adopted plan, Alexander M. Ross, Chief Engineer of the railway, aided by the advice of the widely known engineer Robert Stephenson.

The river at this point is of majestic proportions, over a mile wide, with a 22-foot maximum depth of water flowing at the rapid

ing of pipes, wires, and tracks, and power was granted to lease the lower floor of the bridge. First-mortgage bonds amounting to \$200,000, secured by mortgage deed, were authorized. The agreement, dated May 3, 1894, between the Commissioners of the Queen Victoria Niagara Falls Park, the Niagara Falls Suspension Bridge Company, and the Niagara Falls Park and River Railway Company was confirmed.

1929. The Niagara Lower Arch Bridge Company Limited, on October 24, under the Dominion of Canada Companies Act, was so named in place of the "Niagara Falls Suspension Bridge Company," to become effective January 1, 1930.



rate of 7<sup>4</sup> miles per hour and encumbered at times with ice floes from 3 to 7 feet in thickness and from 15 to 20 square miles in extent. With these tremendous obstacles to be overcome went those inherent in the rigorous climate and the founding of the piers on the bed of solid rock, covered as it was here by large boulders and there by mixed materials including hardpan as much as 12 to 14 feet in thickness.

The adopted plan provided for a single-track tubular-iron structure of 25 spans, of which 24 ranged in length from 241' 3" to 247' 5" and the one over the main channel 330 feet, the whole ascending on an easy gradient, 1 in 130, from each shore to a height of 60 feet from the water surface to the underside of the central tube. The sides of the rectangular tubes consisted of rolled plates manufactured in England and riveted together at the site of the work in the form of girders, 18 feet or more in depth, and covered with a wooden roof sheathed with tin to exclude snow and rain. The piers and abutments of masonry were of substantial dimensions, so amply designed that in later years they were found to be adaptable to an enlarged superstructure. From end to end the river crossing measured 9,144 feet in length, of which the tubular section took up 6,592 feet.

Considered at the time to be the eighth wonder of the world, this famous bridge, admired by all beholders, was traversed by the first train on December 17, 1859, and officially dedicated to service by H.R.H. The Prince of Wales, afterward King Edward VII, on August 25, 1860. Its creation removed the last obstacle to effective intercourse by rail between the focus of trade in Lower Canada and the United States, five years after the similar bond of union had been forged at Niagara Falls.

In the years that followed, the increase of traffic and the difficulties and dangers of operation of steam locomotives in what was in effect a long-drawn-out tunnel, led to the replacement of the single-track tube with double-track, open, steel trusses, designed for Cooper's E-40 loading, as well as ways for carriages and pedestrians, and resting on the old masonry which was modified to meet the new conditions. Twenty-four of the spans varied in length from 242

4. Taken from official records and perhaps true under aggravated conditions only, as it is now said that 4 miles per hour is the maximum velocity under normal conditions.

to 247 feet; the twenty-fifth span, at the central point, was 330 feet, the same length as its predecessor. Under the planning and direction of the Chief Engineer of the Grand Trunk Railway, Joseph Hobson, the work was commenced in October, 1897, and thereafter prosecuted with practically no interference with traffic until successfully brought to a conclusion on December 13, 1898, in respect of train service on the second track and on December 1, 1899, as regards the ordinary roadways. William Gibson of Beamsville, Ontario, was the contractor for the substructural changes and the Dominion Bridge Company of Montreal and the Detroit Bridge & Iron Works for the superstructure.

In November, 1909, the downstream bracket roadway was converted to the use of an electric railway, from which highway service was then excluded, and in 1927 the upstream bracket was widened and strengthened for the increasing needs of vehicular traffic.

Therefore, at the ripe old age of seventy-five years, the structure that became known as the Victoria Jubilee Bridge after it took on new life at the end of the last century, stands as a monument to the early establishment of all-rail communication through neighboring gateways between Quebec and the Northeastern Region of the United States.<sup>5</sup>

#### INTERNATIONAL BRIDGE AT BLACK ROCK

The epochal crossing of the Niagara River at Suspension Bridge had no sooner been completed in 1855, than the need was seen for an upstream means of connection between the two countries where the city of Buffalo was fast growing in importance as a way station between the East and the West. And so, in 1857, the International Bridge Company was incorporated in the State of New York, and likewise in the Province of Canada, to construct, maintain, and manage such a bridge over the Niagara River from Buffalo to Fort Erie, for the passage of pedestrians, vehicles, and railway trains. Nothing coming from this for many years, the Grand Trunk Railway was empowered in 1872 to take over the enterprise with the Great West-

5. Correspondence respecting Railway Interrelations of the United States and Canada; *A Glance at the Victoria Bridge and the Men Who Built It*, by Charles Legge, Civil Engineer, 1860; *Engineering News*, August 26, 1897, pp. 130, 140; *Railway and Engineering Review*, October 1, 1898, p. 547; *Victoria Jubilee Bridge*, by Grand Trunk Railway, 1900.

ern Railway as a co-beneficiary, and as a result the bridge was completed as a single-track structure and opened for traffic on November 3, 1873, eighteen years after the opening of its companion crossing of the Niagara on the north twenty-five miles away.

Because of the swiftness and depth of the river, the extraordinary and rapid fluctuations in its rise and fall and extensive runs of ice from the neighboring lake, the physical difficulties to be dealt with in the building of this bridge were of no mean order. In fact they were such as to call for outstanding courage and skill. Averaging a speed of  $5\frac{1}{2}$  miles per hour the river current at the site of the bridge would flow as fast as 12 miles per hour under the influence of a strong south wind. In depth there was a variation from 10 feet at the Canadian shore pier to 48 feet at the fifth pier from that side. The task of coping with these trying conditions was entrusted to C. S. Gzowski, the famous Canadian engineer and constructor, in so far as the substructure and approaches were concerned, and to the Phoenix Bridge Company of Phoenixville, Pennsylvania, in respect of the superstructure consisting of Pratt trusses made of iron. Their work embraced the bridge across the main river 1,967 $\frac{1}{2}$  feet in length; the 20-foot embankment across Squaw Island in United States territory for a distance of 1,167 feet; and the bridge across Erie Canal or Black Rock Harbor, 437 feet long—a total of 3,571.5 feet.

Over the main river there are eight spans resting on eight piers and two abutments, the first three spans from the Canadian shore each measuring 198 feet in length; the next three, 248 feet each; the pivot-pier swing truss with two channel openings, 362 feet; and the final span, 194 feet. Over the Black Rock Harbor the structure then consisted of a 218-foot swing bridge on a center pier and a fixed span of 219 feet. Originally designed for the light rolling stock of the day, the superstructure in 1901 was replaced by steel trusses of nearly double the capacity. Still later, in 1910 and 1911, the Erie Canal spans were replaced with a double-track swing bridge, 432 feet long, on a new pivot pier, designed for Cooper's E-55 loading and provided in 1921 with facilities for the passage of highway traffic from the mainland at Black Rock to Squaw Island.

Today this second rail crossing of the Niagara Frontier, extending from Fort Erie (Bridgeburg), Ontario, to Buffalo (Black Rock),



New York, stands as the means of connection between the operations of the Canadian National, Wabash, and Pere Marquette<sup>6</sup> railways and the New York Central Lines on the Canadian side of the border, and those of the last-named system and the Erie, Delaware, Lackawanna & Western, and Pennsylvania railroads in the United States. By means of traffic arrangements the business of the Canadian Pacific Railway also reaches this gateway over the Toronto, Hamilton & Buffalo Railway connection.<sup>7</sup>

#### NIAGARA GORGE UPPER BRIDGE

When the Great Western Railway passed to the Grand Trunk in 1882 the American interests which had come into control of the Canada Southern Railway as a link between the New York Central & Hudson River and Michigan Central railroads saw the wisdom of building an independent double-track connection across the Niagara Gorge just above the bridge that had been created in the interest of the Grand Trunk between Niagara Falls, Ontario, and Suspension Bridge, New York, in 1855. This was started in 1883 and opened to traffic in December of that year, ten years after the International Bridge had been built across the Niagara at Black Rock. Designed by the widely known bridge engineer C. C. Schneider as a cantilever supported on two towers with a suspended span between the two river arms, it marked a distinct advance in the art of engineering and became one of the outstanding structures of the day. The height of its deck above the water was 240 feet, only 5 feet less than that of its downstream neighbor, and its total length 910 feet. The tower supports were spaced 495 feet apart from center to center, the river cantilever arms were each 175 feet long, the shore cantilever arms were each 195 feet long, and the suspended span 120 feet long. It was designed for a live loading approximating Cooper's E-23.

Increasing weights of modern railway equipment led to the strengthening of the bridge in 1900 by adding a center truss and tower posts resting on new piers, coupled with an increase of section of some of the truss members, thereby raising its approximate live-load capacity to Cooper's E-35 loading.

6. Use discontinued since 1930.

7. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

However, the march of events brought about the necessity of replacing the old structure with an entirely new one on another location just north of the old one, designed for Cooper's E-70 loading by Hans Ibsen, former Bridge Engineer of the Michigan Central Railroad, and consisting of a double-track, ballasted-floor, steel arch of 640 feet span, center to center of the end hinges, with the deck remaining practically at the same distance above the water as the old one, 240 feet. Commenced in June, 1923, and completed in February, 1925, this third rail crossing of the Niagara River and the second at the site of the Gorge, is the New York Central system's up-to-date independent connection between its holdings on the two sides of the border at the Suspension Bridge, New York-Niagara Falls, Ontario, gateway. As in the case of the International Bridge at Black Rock, the Canadian Pacific Railway reaches this gateway by means of traffic arrangements with its Toronto, Hamilton & Buffalo Railway connection; also the Pere Marquette Railway which enjoys trackage rights over the Michigan Central.

#### SAULT STE MARIE BRIDGE

The extension of the Canadian Pacific Railway from Sudbury, Ontario, on its transcontinental line to a connection with the Minneapolis, St. Paul & Sault Ste. Marie and the Duluth, South Shore & Atlantic railways, over which it later acquired control on the United States side of the border, resulted in 1887-88 in the completion of a large bridge across the St. Marys River at Sault Ste Marie, consisting of nine through pin-and-link spans of 239 feet each, designed for the light train loading of that era. No substantial change in them has since been made, so that the locomotives now there in use are necessarily limited to weights suitable for the structure as originally planned nearly half a century ago.<sup>8</sup>

#### SARNIA TUNNEL

The arrival of the Grand Trunk at Sarnia, Ontario, in 1859 found it separated from its American connections by the wide, deep, and swiftly flowing St. Clair River carrying an enormous volume of water traffic, over which cars were ferried to and from Port Huron,

8. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

Michigan, on the other side. Inclement weather and floating ice served to delay and even interrupt the service for considerable periods during the fall, winter, and spring months, to the grave injury of the company in its competition with other routes for the traffic of the American West.

This embarrassing situation, akin to that which to this day hangs like a millstone around the necks of the rail carriers serving the freight interests of the port of New York from the New Jersey shore, continued unchanged for thirty years. Then, in 1889, work at last was started on a single-track tunnel beneath the river under the auspices of the St. Clair Tunnel Company organized for that purpose in 1886. The engineering genius in this was Joseph Hobson, Chief Engineer of the Grand Trunk, who planned and directed the work and brought it through many trials to a successful conclusion on the date of opening for regular operation on September 19, 1891, on which occasion distinguished guests from both nations were present. Thus was forged the last link in the continuous chain of rail communication between Chicago and the seacoast of New England, started in embryo an even forty years before when train service was inaugurated between Canada and the United States over the Champlain & St. Lawrence Railroad and Vermont Central Railroad beginnings of the Grand Trunk system.

The river at this point was some 40 feet deep, with an underlying bed of clay and quicksand about 46 feet thick, reaching to bedrock. Through this difficult material the tunnel—6,026 feet in length, 20 feet in diameter, and lined with cast-iron segments—was built from each end by means of air-driven shields, with its top a minimum of 15 feet beneath the river bed, and its bottom approximately 9 feet above the underlying rock. This made the track level at its lowest point some 77 feet under the mean level of the river and about 100 feet below the level of the neighboring country. Approaches on 2 per cent gradients in open cuts were excavated at the ends, 3,175 feet long on the Canadian side and 2,467 feet in Michigan, thereby making the total length of the tunnel and its approaches 11,668 feet, or 2.21 miles. It was, and is, well entitled to the claim made for it that in boldness of conception, newness of design, and novelty of many of the methods there employed it was one of the great engineering feats of the time.



For seventeen years the tunnel continued to be operated with steam locomotives, but the presence of gas and smoke became so dangerous to the safety of train crews and passengers that the motive power was changed to electricity of the alternating current overhead type between the terminal yards at Sarnia and Port Huron, and the new service inaugurated on May 17, 1908.<sup>9</sup>

### CORNWALL BRIDGE

The single-track bridge now carrying the track of the New York Central Lines across the St. Lawrence River, between Roosevelttown, New York, and Cornwall, Ontario, was originally built as a part of the Ottawa & New York Railway and Cornwall Bridge Company, and was taken over by the New York Central & Hudson River Railroad in 1913. It is notable not only for its size but also for the serious mishaps that attended its construction and later operation.

Over the south channel of the river, in which lies the international boundary, the bridge consists of three main spans—one 372 feet and the other two 370 feet each in length—with two 61-foot end spans, making the total length of the structure slightly over 1,234 feet. Beyond this is Cornwall Island with which the mainland in Canada is connected by means of a bridge 1,579 feet in length over the St. Lawrence River proper and the Cornwall Canal. The main feature here is the 843-foot triple-span cantilever bridge supported on two piers, of which the central span measures 420 feet. To this is added a 242-foot swing span over the Cornwall Canal and thirteen deck-plate girders, making seventeen spans in all. The work as a whole, embracing the 5-span bridge 1,234 feet long over the south channel and the 17-span bridge 1,579 feet long over the channel on the north, was planned for Cooper's E-35 loading and executed under the supervision of a construction company known as the New York & Ottawa Company, of which the Chief Engineer was F. D. Anthony and the Consulting Engineer, A. A. Stewart.

In the process of construction at the hands of the Phoenix Bridge Company and its subcontractor, SooySmith & Company, started in the fall of 1897, one of the piers and the two spans resting upon it collapsed on September 6, 1898, due to the sudden yielding of undis-

9. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

closed soft material underlying a thin crust of coarse gravel and sand on which the substructure mistakenly had been built. Owing to this disaster the bridge was not opened to traffic until October 1, 1900. Eight years later, on June 23, 1908, another mishap occurred, caused by a failure in the bank of the Cornwall Canal, which wrecked the drawspan and interrupted traffic for an extended period.

Recently the Cornwall-Northern New York International Bridge Corporation was granted the right to construct a toll way over the bridge, and in 1934 the new highway facilities were opened to the public. At present, therefore, this cross-border connection at the Rooseveltown, New York-Cornwall, Ontario, gateway is used not only for the purposes for which it was originally designed but also for the passage of pedestrians and vehicles from one country to the other.<sup>10</sup>

#### DETROIT RIVER TUNNEL

The circumstances that attended the creation of this border tie are quite involved, but they are most interesting in the light they throw on the interrelations of the leading carriers which struggled for mastery in the East.

After the Great Western Railway, the favorite connection of the New York Central at the Niagara Frontier, had reached the east bank of the Detroit River in 1854, it was understood that its exchanges of traffic with the Michigan roads should be effected on their side of the stream. The required break of bulk, and the use of sleighs in winter and small ferry boats in the season of navigation, even though later followed by powerful car ferries, were serious handicaps with which this route had to cope in its competition with the all-American continuous rail route of the Lake Shore & Michigan Southern Railway along the south shore of Lake Erie, which had long been utilized by the Erie Railroad as a means of entrance to Chicago.

It was to remedy this hampering situation that an attempt under the direction of a noted engineer, E. S. Chesbrough, was made in 1870-72 to build a subaqueous tunnel connecting the tracks on the two sides of the border—an attempt which resulted in failure due to

10. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

the treacherous nature of the soil beneath the river bed. The Canada Southern Railway in 1873 completed its rival line from the west end of the International Bridge at Fort Erie, Ontario, to the Detroit Frontier about the same time that the favor of the New York Central at the Niagara Frontier was transferred from the Great Western Railway through Canada to the southern route through the United States, which thereafter became its principal western connection. About 1878 the interests that controlled the New York Central were giving their financial support to the Canada Southern and at the same time secured control of the Michigan Central which in 1882 took over the Canada Southern under lease. Thus the New York Central gained a dominant influence over rival routes on the two sides of Lake Erie, of which the one across the peninsula of Ontario was a competitor of the New York Central's former ally, the Great Western Railway. The absorption of the latter road by the Grand Trunk Railway in the same year made the issue clear between two main routes from Chicago to the East through Canada—the Grand Trunk via the Port Huron–Sarnia gateway and the Michigan Central–Canada Southern joint line via the Detroit–Windsor gateway.

This rivalry stimulated the Michigan Central interests to reopen the question of a rail crossing of the Detroit River, and much thought was given to the building of a high-level bridge which might be used jointly with the Grand Trunk. This effort fell to the ground because the two interests could not agree on a bridge location that would be mutually satisfactory, and the project long remained dormant. While the Grand Trunk, in 1891, had replaced its car-ferry crossing of the St. Clair River at Sarnia with a tunnel, the troubles there encountered with gas and smoke discouraged the Michigan Central interests from doing likewise at Detroit.

Then in the early 1900's came the demonstrated success of electricity as a motive power in lieu of steam at the Grand Central Terminal in New York City, from which it became at once apparent that by the adoption of similar means a tunnel at Detroit might be built which would be free from the operating disadvantages encountered at Sarnia.

Investigations thereupon made in 1905 disclosed a number of conditions which here made the adoption of the usual shield-driven method of tunnel construction highly undesirable. The width of the



river at this point—half a mile—and its maximum depth of 50 feet; the level of the near-by terminal facilities some 24 feet above the water surface on the Detroit side and 34 feet in Canada; the position of bedrock only 35 to 40 feet beneath the bed of the stream; the presence of poisonous gases in the layers of soft clay and quicksand overlying the rock; and the demand that the gradient against east-bound traffic should not exceed  $1\frac{1}{2}$  per cent and against westbound traffic 2 per cent—all prompted the adoption of measures which would enable the tunnel to be built with the top of its structure as high as the required ship channel minimum depth—40 feet—would permit. Boldness was called for in the inception and execution of a design for a double-track tunnel that would deal successfully with such a combination of circumstances. This found its expression in a plan devised by the Author and submitted to contractors for competitive bidding, whereby a trench was to be dredged from shore to shore in which should be lowered a succession of tubular forms, floated in pairs with the aid of temporary wooden bulkhead ends from a distant point of launching to the tunnel site, followed by the deposit around them of concrete by the tremie<sup>11</sup> process, then the pumping out of the tubes from which the entry of water would be prevented by the hardened concrete around their exterior, and, finally, the lining of the interior of the tubes with concrete placed “in the dry” without requiring the use of air pressures. The river section to be built in this manner measured 2,667 feet in length, at each end of which was a shaft and beyond that the land tunnel to be constructed by ordinary methods.

Under the direction of the Advisory Board of Engineers of the Detroit River Tunnel Company—of which the Author was Chairman; W. S. Kinnear, the Chief Engineer; and Howard A. Carson of Boston subway fame, the third member—this plan was carried through to completion by the successful bidders, the Butler Brothers Construction Company, of which Olaf Hoff was the engineering member. Work on the tunnel was begun in August, 1906, and com-

11. A movable pipe through which molten concrete is discharged from a hopper above the water surface to the desired point of deposit at the bottom of the stream or other body of water, without exposing the mixture to loss of cement, or other injury, on its way to the place where it is to harden in the finished structure.

pleted in readiness for the running of the initial train on July 26, 1910. Its total length from crest to crest is 12,792 feet, or 2.42 miles, of which the American approach cut is 1,540 feet in length, the one in Canada 2,942 feet, and the tunnel proper from portal to portal 8,310 feet. Through the adoption of the approach gradients of 2 per cent on the American side and  $1\frac{1}{2}$  per cent in Canada, it was possible with the adopted method of construction to fix the track in the river section at a level but 66 feet below the water surface, in contrast with the 77 feet required with even a steeper eastbound gradient at Sarnia. In doing this it was necessary to locate the top of the Detroit River tunnel structure 8 feet above the bed of the river at its lowest point, where suitable measures were taken to prevent scour and injury from sunken vessels.

Within the capacious internal area of each of the two bores—20 feet in diameter—an ample overhead clearance for locomotives and cars—18 feet—was obtained by the use of a new type of track construction whereby short wooden ties resting directly on concrete were placed under each rail with the drainage gutter between them. Electric locomotives of the direct current, undercontact third-rail type operating from the newly built modern yard in Windsor, Ontario, through the well-lighted, thoroughly drained tunnel to the newly built passenger terminal in Detroit, Michigan, make the passage a speedy, safe, and comfortable one from one country to the other for both passengers and train crews.

The north shore New York Central route through the Detroit-Windsor gateway between Chicago and the East via Canada, therefore, no longer suffers in comparison with the all-American route on the southerly shore of Lake Erie. It ranks with the best. Powerful car ferries, however, still carry the cross-border traffic of the Canadian National, Pere Marquette, Wabash, and Canadian Pacific railways terminating at Windsor, except in the instance of the passenger service of the Canadian Pacific which is handled through the tunnel to and from Detroit.<sup>12</sup>

12. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; and William J. Wilgus, "The Detroit River Tunnel," *Minutes of Proceedings* (Institution of Civil Engineers, London, 1910-11), and personal file deposited in the Engineering Societies Library, New York City. Also see p. 114, *supra*.

## VAN BUREN BRIDGE

The border structure of magnitude last to be constructed was the bridge over the St. John River, which serves as a means of connection between the Bangor & Aroostook Railroad at Van Buren at the northerly tip of the State of Maine and the National Transcontinental Line of the Canadian National Railways near St. Leonard, New Brunswick. Commenced in the fall of 1914 under the auspices of the Van Buren Bridge Company, of which the Author was Consulting Engineer, and opened for service as planned on May 1 of the following year, it was intended not only to join the Bangor & Aroostook system with the recently completed Dominion Government's line across the river but also with the existing railway extending through the timber region of New Brunswick to Campbellton on Baie de Chaleur. The latter connection has since been removed.

This structure, with a total length of something in excess of 800 feet and notable for its speedy construction under the extremely low temperatures of the winter months in that clime, consists of 5 single-track 160-foot spans designed for Cooper's E-50 loading, resting on concrete abutments and piers in water then having a maximum depth of some 20 feet at the ordinary stage. The substructure was built by Cyr Brothers of Waterville, Maine, and the superstructure by the Dominion Bridge Company, Inc., of Montreal, which employed the cantilever method of erection from the Canadian end in order to avoid the danger of a premature break-up of ice while the work was in progress.

Of recent years the water level has been raised through the creation of a downstream hydroelectric plant at Grand Falls, New Brunswick, and the necessary minor changes made in the substructure of the bridge by an amicable agreement between the parties in interest.<sup>13</sup>

13. "New Canada-New England Railroad Link Completed," *Engineering Record*, May 1, 1915, p. 559; also Van Buren Bridge Company data in the records of William J. Wilgus deposited in the Engineering Societies Library, New York City.



## CHAPTER IX

### COMPARATIVE INVESTMENT AND INCOME

WITH the railway systems of the United States and Canada so closely woven together, physically through intertwinings at the border gateways and psychologically through the maintenance of close business relations over a period of a hundred years, it is but natural to expect that whatever may vitally affect one will influence the other. Such questions as investment, the relation of costs of operation to gross revenue, the burden of taxation, and the density, length of haul, and character of traffic all play their part in this. Some attention, therefore, should be paid to them before approaching the outstanding subject of interrelated rates so essential to the neighborliness of the two countries.

#### INVESTMENT<sup>1</sup>

American railways have an outstanding capital investment of nearly twenty-three and a half billion dollars in their combined system of 245,703 miles of road over which 54,228 locomotives and 2,238,190 cars are engaged in the movement of the nation's rail traffic. Of the capital investment \$10,219,793,733 is represented by stock and \$13,228,287,864 by bonds. Therefore over a half of the capital liabilities of the railways of the country—56.4 per cent to be exact—calls for a fixed return, failing which their solvency as a whole is imperiled or destroyed. Throughout the country this is distributed as shown in Table 36.

The Interstate Commerce Commission, however, finds that from these figures certain holdings of railway securities as well as investments in switching and terminal companies should be excluded in arriving at the *net* capital invested in the railways viewed as a national system. This leaves the total investment for the 243,879 miles used in this connection, \$18,830,912,324, or approximately 81 per cent

1. *Statistics of Railways in the United States, 1933*, pp. s-3, s-12, s-34, s-41; and *Statistics of Steam Railways of Canada, 1933*, pp. 11, 14-15, 36-37, 52, 59. It should be added that all statistics in this chapter, unless otherwise noted, are for the year 1933.

TABLE 36

*Capital Investment in United States in 1933*

	<i>Railway capital outstanding</i>	<i>Mileage owned in the U.S.</i>	<i>Per mile of road</i>
Eastern District	\$ 9,651,634,456	57,963	\$166,514
Western District	10,191,711,157	138,728	73,465
	<hr/> \$19,843,345,613	<hr/> 196,691	<hr/> \$100,886
Southern District	3,604,735,984	49,012	73,548
	<hr/> \$23,448,081,597	<hr/> 245,703	<hr/> \$ 95,433

of the figures given above. The portion represented by unmatured funded debt becomes 62 per cent instead of 56 per cent, thereby indicating an even less stable financial structure.<sup>2</sup> On this basis the *net* capital investment per mile is \$77,214 for the country at large, in contrast with the much higher rate of \$95,433 based on outstanding securities, exclusive of those held by railroad companies.

The Eastern District's capital investment per mile, as will be seen, is by far the most costly, and the Western District's the least, whereas the average of \$100,886 for both, in territory corresponding to that on the other side of the border, is but little in excess of the average of \$95,433 per mile for the country as a whole. The same relationship is assumed to be true in a distribution of the *net* investment between the several sections of the country.

In Canada the capital liability of its steam railways, applying to 41,997 miles of owned and leased lines, 5,187 locomotives, and 230,144 cars, is \$4,390,525,020, of which \$1,438,834,552, or 32.8 per cent, is represented by stock of various classes, and \$2,951,690,468,<sup>3</sup> or 67.2 per cent, by funded debt. The proportionate burden of fixed obligations is, therefore, much weightier in Canada than in the United States, where the ratio, though high, is but 56.4 per cent. This capitalization is equal to \$104,544 per mile of road, in contrast with the corresponding figure in the United States, \$100,886, in the two districts where the conditions are nearest like those that prevail

2. The net capitalization is made up of \$7,174,773,595 in capital stock and \$11,656,138,729 in funded debt.

3. It is claimed, and said to be admitted, that these capital figures do not represent the sum of actual amounts invested in fact in rail capital facilities.

in Canada. Just as in the United States certain items should be excluded in arriving at the *net* capital invested in the railways of that country, so in Canada various deductions should be made in order that the investment in road and equipment may be more accurately determined. This net cost is reported to be \$3,365,464,225, equal to \$80,136 per mile. Compared with the corresponding figure for the combined mileages of the Eastern and Western districts of the United States, \$81,600,<sup>4</sup> it is apparent that the investment per mile in the two countries is astonishingly close—in fact almost identical.<sup>5</sup>

### VOLUME OF FREIGHT TRAFFIC

The service performed by these railways is next to be considered. The number of tons of freight originated and carried is shown in Table 37, it being understood that in the number carried are included duplications in reporting when the shipments move over more than one railway.<sup>6</sup>

Several remarkable facts are revealed by this analysis. With 11.9 times the population of Canada, the United States in 1933 originated 12.8 times as much revenue freight, handled 11.9 times as many ton-miles per mile of revenue freight, and almost exactly the same number of ton-miles of revenue freight per inhabitant. When it comes to density of traffic, however, that of the United States is practically twice that of Canada, due to the possession by the latter country of twice the mileage per inhabitant on the other side of the border. In a word, Canada has two miles of road with which to do the same volume of traffic that is performed by one mile of road in the United States. In a previous chapter<sup>7</sup> attention was directed to this excess of mileage in Canada as compared with railway mileage in the United States, ranging from 1.6 times as much in the Western provinces to 3.9 times as much in the Maritimes.<sup>8</sup> The volume of

4. 80.9 per cent of \$100,886, based on the ratio that net capitalization bears to the total capitalization; see p. 177, *supra*.

5. Weight in this is not given to the extinguishment of capital in both countries through railroad bankruptcies said to have been much more drastic in the United States than in Canada. See footnote §, p. 189, *infra*.

6. *Statistics of Railways in the United States, 1933*, pp. s-99, s-118; *Statistics of Steam Railways of Canada, 1933*, pp. 20-21, 185.

7. P. 23, *supra*.

8. It is not to be inferred from this that the excess mileage per inhabitant



TABLE 37

*Volume of Freight Traffic in 1933*

(Figures down to and including "Total revenue and non-revenue freight" are for thousands of tons)

<i>In the United States</i>		<i>In Canada</i>	
Revenue freight Originated	733,391	Originating on Canadian rail- ways	41,983
		Received from foreign con- nections	15,381
		Total originated	57,364
		Interchanged between Cana- dian railways	6,271
Carried	1,322,463	.....	63,635
Non-revenue freight	145,000*	.....	10,009
Total revenue and non- revenue freight carried	1,467,463	.....	73,644
The number of tons carried one mile were			
Revenue freight	250,651,190	.....	21,092,594
Non-revenue freight	24,000,000*	.....	2,333,557
Total revenue and non- revenue freight	274,651,190	.....	23,426,151
The average haul in miles was therefore			
Revenue freight originated	342	.....	368
Revenue freight carried	190	.....	331
The number of ton-miles of revenue freight per in- habitant were	2,042†	.....	2,033†
In density of traffic, meas- ured by revenue ton-miles per mile of road, the two countries compare thus	972,262	.....	496,705

\* Estimated.

† Calculated.

traffic moved per inhabitant in the two countries being the same, and the mileage per inhabitant at the same net investment per mile being

in Canada is indefensible. In large part, even where redundant, it has contributed to national wealth through the opening of new territory that otherwise would have remained undeveloped, and through the promotion of agriculture and trade by reason of lowered costs of transportation.

twice as great in Canada as in the United States, it follows that the cost of service for an equal volume of traffic in Canada, whether borne by the public through taxation or through rates paid by the shipper, includes twice as much for a return on the investment as in the United States, diminished only to the extent that a lower rate of interest is paid on the funded debt in Canada by reason of the government guaranty back of the bonds.

### VOLUME OF PASSENGER TRAFFIC

Turning now to the matter of passenger traffic, the relative amounts handled in the two countries are brought out thus:<sup>9</sup>

TABLE 38

#### *Volume of Passenger Traffic in 1933*

	<i>In U.S.</i>	<i>In Canada</i>
Passengers carried (1,000's)	434,848	19,172
Passengers carried one mile (1,000's)	16,368,043	1,393,041
Passengers carried per mile of road	1,687	451
Passengers carried one mile per mile of road	63,500	32,804
Average distance each railway carried a passenger (miles)*	37.6	72.7
Passenger miles per inhabitant	133	134

\* The fact that there are more carriers per passenger in the United States than in Canada, due to the latter's concentration of holdings in two systems, accounts in large part for the shorter average haul in the United States.

In this activity the railways of the two countries, as in the case of freight traffic, show a similarity that borders on the uncanny. With 11.9 times the population the United States in 1933 handled 11.7 times as many passenger-miles and practically the same number of passenger-miles per inhabitant. The density of traffic, however, in the United States is almost twice that of Canada, for the same reason as in the case of freight traffic—one half the road mileage per inhabitant as in Canada—plus the fact that the number of passengers carried per mile of road is nearly four times as great but the distance per passenger only half.

9. *Statistics of Railways in the United States, 1933*, pp. s-99, s-116, s-118, s-122; *Statistics of Steam Railways of Canada, 1933*, pp. 20-21, 185.

## FLUCTUATIONS OF TRAFFIC

That the ratios of the two countries in respect of population, freight traffic, and passenger traffic have been strikingly constant over a long term of years is clearly shown below:<sup>10</sup>

TABLE 39

*Ton-Miles and Passenger-Miles, 1920 to 1933*

Year	Tons revenue freight carried one mile (1,000's)			Passengers carried one mile (1,000's)		
	United States	Canada	Ratio U.S. to Canada	United States	Canada	Ratio U.S. to Canada
1920	413,698,749	31,894,411	13.0	47,369,906	3,522,494	13.4
1921	309,533,365	26,621,630	11.6	37,705,737	2,960,583	12.7
1922	342,187,536	30,367,885	11.3	35,811,046	2,814,113	12.7
1923	416,255,550	34,067,658	12.2	38,294,178	3,076,341	12.4
1924	391,945,037	30,513,819	12.8	36,868,290	2,872,333	12.7
1925	417,418,464	31,965,204	13.1	36,166,973	2,910,760	12.4
1926	447,443,627	34,153,466	13.1	35,672,729	2,998,952	11.9
1927	432,013,979	34,901,652	12.4	33,797,754	3,051,784	11.1
1928	436,086,747	41,610,660	10.5	31,717,566	3,140,860	10.1
1929	450,189,394	35,025,895	12.9	31,164,739	2,897,214	10.7
1930	385,815,376	29,604,545	13.0	26,875,642	2,422,874	11.1
1931	311,072,637	25,707,373	12.1	21,933,345	1,748,210	12.5
1932	235,308,521	23,136,666	10.2	16,997,426	1,435,959	11.8
1933	250,651,190	21,092,594	11.9	16,368,043	1,393,041	11.7

Just as the ratio of Canada's population to that of the United States from 1920 to 1933 remained approximately at 1:12, so did the ratios of the two kinds of traffic continue substantially at the same figure. As traffic rose and fell in the Union so it did in the Dominion, the only exceptions, in a minor degree, having taken place in 1928 when Canada's peak in freight traffic occurred a year ahead of that of the United States, and in 1932 when the movement in the United States suffered a more precipitate drop than that of its neighbor. The latest year for which comparative data are available, 1933, apparently is as truly representative for the purposes of this study as any that may be selected. This evidence would appear to be convincing that the two peoples are remarkably alike in tempo, at least in a material sense, and that their railways, interrelated as they are, closely respond to the same influences. One other feature

10. *Statistics of Railways in the United States, 1933*, p. s-99; *Canada Year Book, 1934-35*, pp. 706-707.



worthy of comment is the similarity of decrease in 1932-33 from the pre-depression levels, the falling off in both countries as a whole having been quite like the decrease at the border gateways to which attention has been called—approximately 50 per cent.

### CHARACTER OF TRAFFIC

The nature of the freight shipments by rail in the two countries has as much to do with matters in which they possess a common interest as their volume. This is brought out in the subjoined table:<sup>11</sup>

TABLE 40  
*Commodity Tonnage Ratios in 1933*

Commodities	United States (Class I Roads)					Canada
	Eastern District	Western District	Both Eastern and Western Districts	Southern District	All districts	All districts
Agriculture	6.9%	23.4%	12.7%	9.0%	12.0%	26.9%
Animals and their products	2.3	4.6	3.1	1.2	2.7	3.8
Mines	61.0	34.2	51.5	63.8	54.0	32.6
Forests	2.2	8.5	4.5	6.9	4.9	10.9
Manufactures and miscellaneous	25.4	27.4	26.1	16.6	24.2	25.8
Less than carload	2.2	1.9	2.1	2.5	2.2	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Several quite startling differences are revealed in this. The proportion of the products in which the farmer is directly interested—agriculture and animals—is in Canada about twice that in the United States, whether the latter is taken as a whole or limited to the combined Eastern and Western districts, which are more nearly comparable to the territory across the border. The same is true of forest products in even a greater degree. In manufactures and miscellaneous and less-than-carload shipments the combined percentage is not far removed from that in the United States. But in the products of mines the ratio is pronouncedly the other way—that of Canada being somewhat over half of that of the United States.

11. *Statistics of Railways in the United States, 1933*, p. s-50; *Statistics of Steam Railways of Canada, 1933*, pp. 130-185, inclusive.

If the combined ratios for products of agriculture, animals, and forest in Canada, 41.6 per cent, are compared with the corresponding figure of 19.6 per cent in the United States, it will be seen that in matters having to do with the soil and the sea, Canada's proportion of its rail shipments is considerably more than twice that of its neighbor's proportion of corresponding shipments in the United States. To a considerable extent this relationship is reversed in respect of the products of the mines of the United States and of manufactures in connection with which the products of mines, including coal, play such an important part. Canada, therefore, is to be looked upon as primarily an agrarian nation—a fact to be borne in mind when contrasting its rate structure with that of the United States, where industry is in the fore.

#### CROSS-BORDER TRAFFIC

It is this difference in characteristics that makes for trade across the border in those things which the other country lacks. In Table 41, showing exports from one country to the other, will be seen the money value of goods interchanged in 1933, from which an idea may be gained of their relative importance.<sup>12</sup> Not the least interesting of the conclusions to be drawn from this table is its agreement in general with the commodity relationships set forth in the foregoing tabulation. Canadian railways carry a superabundance of forest and animal products with which in the main to meet cross-border demands; and the railways of the United States a superabundance of coal, petroleum, and iron and their products with which to make an exchange.

In addition to this north-and-south movement there is the east-and-west movement in bond of freight from point to point in one country through the territory of the other. The summation of all kinds—north and south, and east and west—is given in Table 42, page 185.<sup>13</sup>

12. *Canada Year Book, 1934-35*, pp. 566-615, inclusive.

13. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; Letter from R. H. Coats, Dominion Statistician, August 10, 1935. Foreign connections include steamship lines at seaports as well as the railways of the United States.

TABLE 41

*Value and Character of Cross-Border Exports in 1933*

<i>Canadian produce moved to the United States</i>		<i>United States produce moved to Canada for consumption</i>	
<i>Agricultural and vegetable products</i>			
Fruits, vegetables, farina- ceous products, grains, and miscellaneous items	\$ 3,905,813	Fruits (fresh, dried, canned), nuts, vegetables, grains and farinaceous products, vege- table oils, tobacco, rubber, turpentine, etc.	\$ 30,212,284
<i>Animals and animal products</i>			
Fish (fresh, canned, and dried), furs, animals, hides, meats, etc.	13,948,692	Furs, leather, oils, fats, hides, skins, fish, animals, etc.	8,574,474
<i>Fibers and textiles</i>			
Binder twine, wool, and mis- cellaneous items	867,628	Cotton and cotton goods, silk and silk goods, sisal, textile products, etc.	22,479,022
<i>Wood, wood products and paper</i>			
Newsprint, woodpulp, shin- gles, planks and boards, logs, round timber, etc.	93,914,355	Books and printed matter, wood and wood products, paper, etc.	15,104,602
<i>Iron and its products</i>			
Pigs, ingots, blooms, billets, rolling mill products, farm implements and machin- ery, etc.	1,958,419	Machinery (except agricul- tural), vehicles, rolling mill products, engines and boilers, farm implements, castings and forgings, etc.	43,934,110
<i>Non-ferrous metals</i>			
Precious metals, nickel, copper, aluminum, etc.	13,807,581	Electrical apparatus, alu- minum, brass, lead and its products, copper, tin, zinc, precious metals, etc.	12,940,862
<i>Non-metallic minerals</i>			
Asbestos, coal and its prod- ucts, petroleum and its products, abrasives, gyp- sum, lime, etc.	4,937,126	Petroleum, asphalt, etc., coal and coal products, glass and glassware, clay prod- ucts, sulphur, etc.	62,921,986
<i>Chemicals and allied products</i>			
Fertilizers, soda and soda compounds, etc.	4,668,260	Inorganic chemicals, dyeing and tanning materials, fer- tilizers, soaps, paints, etc.	15,465,420
<i>Miscellaneous commodities</i>			
Settlers' effects, electrical energy, films, etc.	5,152,526	Household, amusement and sporting goods, settlers' effects, post-office parcels, educational equipment, etc.	20,915,295
Total	\$143,160,400	Total	\$232,548,055



TABLE 42

*Canadian Railway Freight Interchanges with Foreign Connections  
in 1933*

	Tons of revenue freight		Total	Ratio
	Received from foreign connections	Delivered to foreign connections		
Agricultural products	2,670,291	6,858,718	9,529,009	28.0%
Animal products	1,283,475	1,327,086	2,610,561	7.7
Mine products	6,404,920	1,576,493	7,981,413	23.4
Forest products	498,654	1,763,095	2,261,749	6.6
Manufactures and miscellaneous	5,127,502	6,580,379	11,707,881	34.3
Total	15,984,842	18,105,771	34,090,613	100.0%

It will be noted that the ratios thus obtaining at the border differ somewhat from those having to do with the railway system of Canada as a whole. The fact remains, however, that in total the agricultural, animal, and forest products of the soil exceed either of the other two, while the mine products ratio is less than for the country as a whole and manufactures and miscellaneous greater.

Inasmuch as this is in large part the joint traffic of the two countries interchanged at the border, it is to be noted that its character reflects their mingled influence. In contrast with the 34,090,613 tons received from and delivered to all foreign connections, both railways and steamships, by the Canadian railways in 1933,<sup>14</sup> the interchanges with the United States railways at the 50 border gateways in the same year, as heretofore shown, totaled 36,946,500 tons.<sup>15</sup> The former figure includes steamship interchanges at Canadian seaports, of which 4,368,414 tons were handled at Halifax, Montreal, Quebec, Saint John, and Vancouver; but it does not include through freight moved across the soil of Minnesota and Maine, nor does it include non-revenue freight embraced to a more or less extent in the figure representing interchanges with the United States railways. In the absence of reliable data not now obtainable, it is impossible to reconcile such differences as may exist if an attempt should be made to place the figures on a comparable basis.

Broadly speaking, it may be said that a third of the freight traffic of the Canadian railways crosses the border at one gateway or

14. See above.

15. P. 154, *supra*.

another, and in so doing sets up vital interrelations, directly and indirectly, with all of the railways of the United States.<sup>16</sup>

### INCOME ACCOUNTS

The investment in road and equipment and the volume and character of traffic being as they are, it may well be asked what financial results accrue from the service thus rendered on the two sides of the border and in what manner are they interrelated. In the year 1933 they were as shown in Table 43, pages 188–189.<sup>17</sup>

In this year the railways of the United States as a whole, therefore, fell slightly short of meeting their expenses, taxes, and fixed obligations, leaving nothing for a return on the portion of the investment represented by capital stock and nothing for burdens borne through charges to profit and loss. But the Canadian railways made a far less happy showing, in that they fell nearly a hundred million dollars short of meeting those obligations. It will be interesting and instructive to trace the cause of the marked difference in these financial results in the two countries, bearing as they do on the rate situation to be dealt with in the succeeding chapter.

### OPERATING REVENUES

The ratio of Canadian to American operating revenues, 1:11.8, again is almost identical with the population ratio, 1:11.9, just as it was in the case of the revenue ton-mileage handled in that year, 1:11.9, and passenger miles, 1:11.7. That this was no unusual relationship is shown by a comparison of operating revenues in preceding years, the ratio in 1920 having been 1:12.8 and in 1929, 1:11.9. A comparison of the average receipts per ton-mile and per passenger mile over the entire period 1920 to 1933, inclusive, as set forth in Table 44, leads to the same conclusion.<sup>18</sup>

From this it will be seen that the average Canadian receipts per freight ton-mile were practically the same as those of the United States in 1920 and slightly over in 1929 and 1930, but that in the other years they have ranged from 5 to 10 or more per cent less, end-

16. See footnote, p. 154, *supra*.

17. *Statistics of Railways in the United States, 1933*, pp. s-3, s-66; *Statistics of Steam Railways of Canada, 1933*, pp. 14-15.

18. *Statistics of Railways in the United States, 1933*, p. s-99; *Canada Year Book, 1934-35*, pp. 706-707.

TABLE 44

*Ton-Mile and Passenger-Mile Earnings, 1920 to 1933*

Year	Average receipts (cents)			
	Per ton-mile		Per passenger-mile	
	United States	Canada	United States	Canada
1920	1.069	1.071	2.75	2.92
1921	1.294	1.200	3.09	3.04
1922	1.194	1.039	3.04	2.82
1923	1.132	0.987	3.03	2.76
1924	1.132	1.019	2.99	2.79
1925	1.114	1.012	2.94	2.69
1926	1.096	1.043	2.94	2.71
1927	1.095	1.029	2.90	2.69
1928	1.094	0.994	2.85	2.67
1929	1.088	1.099	2.81	2.77
1930	1.074	1.090	2.72	2.76
1931	1.062	1.013	2.52	2.72
1932	1.056	0.937	2.22	2.54
1933	1.009	0.955	2.02	2.29

ing in 1933 at a figure 5 per cent less than the one across the border. In both countries the trend has been downward.<sup>19</sup> All in all the results have been remarkably close.

19. While this decrease in freight rates from 1921 to 1933 has averaged 22 per cent in the United States and 20 per cent in Canada, and in passenger rates 35 per cent and 25 per cent, respectively, the drop has not been nearly as great as in ocean rates and wholesale prices. In the case of farm produce the burden of freight charges in the United States, measured by the ratio of rate per ton to value, has more than doubled from 1928 to 1932, instead of decreasing. If the contrast is made between prewar and postwar levels it will be found that wholesale prices in 1931 were only 5 per cent above the prewar figure compared with a far greater rise in railroad rates. For instance, in Canada, in 1916, the average freight ton-mile rate was 0.65 cents and the average passenger mile rate, 1.95 cents; and in the United States 0.72 cents and 2.05 cents, respectively. In both countries, therefore, there has been a pronounced rate increase since 1916 amounting in 1933 to 47 per cent in Canada and 40 per cent in the United States in so far as freight is concerned, and 17 per cent in Canada in respect of passengers. From this it is evident that land transportation by rail, despite the gradual postwar decrease in rates, is far from having adjusted itself to the new conditions to which other forms of human endeavor have had to bow. That is a situation which it still faces. See Moulton and Associates, *The American Transportation Problem*, pp. lviii, 113, 765, 766, and *The World Almanac, 1935*, p. 327.



TABLE 43

*Income Accounts in 1933*

	United States		Canada	
	System (1,000's)	Per mile operated*	System (1,000's)	Per mile operated*
Operating revenues	\$3,195,929	\$12,443	\$270,278	\$6,274
Operating expenses	2,325,484	9,054	233,133	5,412
Net operating revenue	870,445	3,389	37,145	862
Tax accruals	\$268,105	\$1,044	\$ 8,849	\$ 205
Uncollectible revenue	1,234	5	118	3
	269,339	1,049	8,967	208
Railway operating income	601,106	2,340	28,178	654
Equipment and joint facility rents	88,605	345	2,119†	49
Net railway operating income	512,501	1,995	26,059	605
Other income	126,719	493	21,882	508
Gross income	639,220	2,488	47,941	1,113
Interest on funded and unfunded debt	612,918†	2,386	118,845§	2,759
Other deductions	39,588	154	27,591	640
Total deductions	652,506	2,540	146,436	3,399
Net income available for dividends, etc.	\$ 13,286¶	\$ 52¶	\$ 98,495¶	\$2,286¶

\* United States = 256,849 miles; Canada = 43,081 miles.

† Hire of freight cars only.

‡ 4.63 per cent on \$13,228,287,864 of funded debt only. The average nominal rate of interest on all funded debt outstanding, excluding non-interest-bearing debt and principal of unfunded debt, was 4.60 per cent (*Statistics of Railways in the United States, 1933*, p. s-39).

\$4.02 per cent on \$2,951,690,468 of funded debt (*Statistics of Steam Railways of Canada, 1933*, p. 15). Interest on unfunded debt is reported by the Dominion Bureau of Statistics to be "relatively small" and, therefore, its principal amount in this has been ignored. In this connection the following quotation is given from a reliable source in Canada:

"As is shown in the accounts of the Canadian National Railways there was invested in 1933 by the Dominion Government about \$404 millions in what are known as 'Canadian Government Railways,' constituting a part of the much larger Canadian National Railways. No annual interest on this investment (order of magnitude \$16-\$18 millions) is either recorded, accrued, or paid by the Can. Gov't Rys. because they were constructed not as commercial or profit making enterprises, but rather to give expression to broad national policies of the Dominion. Such interest charges are not included in the above Canadian income statement. If, however, it were decided to accrue interest on this investment, the Canadian net income deficit would be increased above that shown, by the indicated amount. On the other hand, there is already included in the above statement the accrued but unpaid interest on 'Loans and Advances' made by the Dominion Government to the Canadian lines of the Canadian National Railways. In the year 1933 the amount of the accrued but unpaid interest on 'Loans and Advances' made to the whole Canadian National Railways was about \$36.0 millions. There is a school of thought which says that at least part of this accrued but unpaid interest should not be set up as an annual charge because part of the Loans and Advances made by the Canadian Government to the Canadian National Railways are payments made by a shareholder to maintain his title and ownership in the property which would otherwise default. To whatever degree this contention be sound, the deficit shown in the above Canadian net income statement would be reduced. Again it is fair to observe that the extinguishment of capital through bankruptcies has been relatively negligible in Canada when compared to severe results in the United States—thus throwing any comparison between these income statements considerably out of proportion."

These questions are so complex and controversial that, for the purpose of this study, they are merely mentioned and the statistical illustrations used are those reported by the respective public authorities of each country.

¶ Available for a return on the portion of the investment represented by stock and for sinking funds and reserves and investments in railways and miscellaneous, amounting in the case of the Canadian railways to \$18,844,260 in 1933 and in the case of the American railways to \$145,816,182 in the same year. Total debits to profit and loss on the Canadian systems were \$86,128,542 in 1930, \$128,564,510 in 1931, \$114,889,103 in 1932, \$117,339,379 in 1933, and \$100,714,745 in 1934, of which a considerable portion is said to have been made up of retirements in contrast with the practice in the United States of charging them to operating expenses. In the case of the American railways the total debits to profit and loss in 1933 amounted to \$250,042,372.

¶ Figures set in *italic* indicate deficits.

In passenger fares the average rate per mile was somewhat lower in Canada than in the United States from 1921 until 1930 when it became slightly the greater and has so continued to the last year for which data are available, 1933. In both countries the trend has been distinctly downward—more so than in the case of freight.

It is when we contrast the operating revenues per mile, however, that the similarity of results disappears. In this the Canadian figure is approximately one half that of the United States, which is accounted for by the existence in the Dominion of twice the mileage of railways in the Union for the performance of the same amount of business. In this lies the crux of the situation, bearing as it does on the additional burdens on this account to be borne by the Canadian people through taxation, the reverberations of which affect rate problems in the United States.

#### OPERATING EXPENSES AND NET REVENUE

Inasmuch as the railway employees of both countries belong to the same trade-unions for corresponding occupations, their wages and conditions of service are substantially alike.<sup>20</sup> Such differences as do exist are reflected in a slightly lower average annual wage on the Canadian side of the border. Nevertheless, the ratio of operating expenses to operating revenues in Canada is much higher than in the United States, due largely to the fact that twice as much mileage is in use in Canada for the handling of an equivalent volume of traffic. As is well known there are certain overhead and other fixed expenses which do not fluctuate, but rather remain practically constant, regardless of the service performed. Others vary to some extent, but not in direct proportion to the volume of traffic, such as maintenance of way and structures, supervision and the operation of stations and terminals. Their cost involves lowered efficiency when two routes are employed to do the work of one, as well as sheer waste unless the purpose to be served is competition as a stimulus to efficiency obtainable in no other way. This unescapable result is brought out in Table 45.<sup>21</sup>

20. *Report of the Royal Commission To Inquire into Railways and Transportation in Canada, 1931-32*, p. 60.

21. *Statistics of Railways in the United States, 1933*, p. s-99; *Canada Year Book, 1934-35*, p. 704.



TABLE 45

*Operating Ratios, 1920 to 1933*

Year	Ratio of operating expenses to operating revenues	
	United States	Canada
1920	94.36	97.18
1921	82.89	92.25
1922	79.48	89.39
1923	77.88	86.52
1924	76.24	85.77
1925	74.17	81.70
1926	73.23	78.91
1927	74.65	81.68
1928	72.57	78.53
1929	71.85	81.08
1930	74.56	83.86
1931	77.10	89.53
1932	77.06	87.48
1933	72.82	86.26

The excess of the Canadian over the American ratio thus remained fairly constant until 1931 when it began to mount until in 1933 the Dominion ratio was more than 18 per cent higher than in the United States. In consequence of this situation the operating expenses per mile in Canada were 60 per cent of those beyond the border instead of 50 per cent to correspond to the spread of the same volume of traffic over double the mileage, and the remainder available for taxes and other obligations and a return on the investment—\$862 per mile—was only 25 per cent of the corresponding figure in the United States—\$3,389 per mile.<sup>22</sup>

#### TAX ACCRUALS, OTHER INCOME, AND GROSS INCOME

In taxes directly charged to railway operating accounts the Canadian lines bear only one fifth as much as in the United States—\$205 per mile in contrast with \$1,044 on the other side. This helps out in the evening up of results in that the remainder for net operating revenue at \$654 per mile in Canada becomes 28 per cent of the corresponding result in the United States—\$2,340. The Canadian

22. See p. 188, *supra*.

situation, compared with that in the United States, is still further bettered when a much smaller charge for equipment and joint-facility rents is given weight, as well as a slightly greater return through "other income." In consequence, the gross income per mile, available for interest charges and other necessary deductions, becomes \$1,113 per mile in comparison with the American figure of \$2,488 per mile. Through amelioration of taxes, borne instead by the general public, the Canadian railway system as a whole is thus enabled to bring up its gross income per mile to nearly a half of that in the United States where the same volume of traffic per capita is handled with half the mileage.<sup>23</sup>

### DEDUCTIONS AND NET INCOME

Although the gross income per mile in Canada is less than half of that in the United States, the burden of interest charges on the funded and unfunded debt and other deductions<sup>23</sup>—\$3,399 per mile—is 34 per cent greater than its companion figure of \$2,540 per mile in the Union. The final result is that in 1933 there was a loss of \$2,286 per mile in Canada as compared with a loss of but \$52 per mile in the United States. This showing would have been far worse in Canada were it not that the average rate on its borrowings, 4.02 per cent is so much less than the average rate in the United States, 4.63 per cent.<sup>23</sup>

It will be recalled that in this year, 1933, the volume of traffic per inhabitant in each of the two countries was about equal—slightly over 2,000 ton-miles of freight and 133 passenger-miles. If to the railway revenues collected from the public in each country the loss in net income indirectly borne by the public is added, the resulting total of \$368,773,000 in Canada is in the ratio of 1:8.7 to the figure of \$3,209,215,000 in the United States, instead of the population and traffic ratio of slightly less than 1:12.<sup>24</sup>

### COST OF SERVICE PER CAPITA

Translated into cost of rail transportation per inhabitant this means that in the given year the outgo for doing an equivalent amount of work, exclusive of a return on the portion of the investment financed by the issue of capital stock, was something over \$35

23. See pp. 188, 189, *supra*.

24. See pp. 179, 188, *supra*.

in the Dominion, in contrast with \$26 in the Union, or one third more. This indicates the price, based on the results of 1933, which Canadians pay for a much more extended railway mileage than has been found necessary in the United States for an equivalent volume of traffic. In part this extra burden of expense is to be ascribed to the terrific difficulties with which Canadians have had to cope—the building of long stretches of line through uninhabited wildernesses in order that their widely separated regions of production may be cemented together in a national sense. In part, too, this has been brought about by the desire of Canadians to develop their outlying territories, to foster competition, and to place means of rail transportation as close as possible to the door of the shipper. In the regulation of railway rates in the United States the carriers there have made much of the argument that they are compelled to compete with railways beyond the border where a substantial portion of the cost of service, including taxes and fixed charges, is thus borne by the Dominion Government and the provinces.

#### EFFECT ON RATES

That these financial results in Canada are such as to call for a sacrifice by the public through taxation may be shown in another way. The revenue collected per mile in 1933 was \$6,274, but in view of the fact that the loss per mile, after the payment of interest on the debt, was \$2,286, it would have been necessary to charge the public \$8,560 if the Canadian railways were to do as well as the railways in the United States.<sup>25</sup> To do this it would have been necessary for the Canadian carriers to raise their average rates upward of 36 per cent, from 0.955 to 1.3 cents per ton-mile for freight and from 2.29 to 3.1 cents per mile for passengers.<sup>26</sup>

The effect of this on cross-border interchange of traffic, if put into

25. See p. 188, *supra*.

26. If the total debits to profit and loss in 1933, aggregating \$117,339,379, are to be considered in this, the charge to the public, in one way or another, was \$8,997 per mile, or more than 43 per cent in excess of the collections made through the shipper and traveler. On this basis it would have been necessary to raise the average ton-mile rate to upward of 1.4 cents and the average passenger-mile rate to 3¼ cents, if the users of the railway facilities were to bear the full burden. Of course all of these figures will vary to the extent that weight is given to the controversial points to which reference is made in the footnote on p. 189, *supra*. These rates would be still higher were



effect, would be disastrous to both the Canadian people and their railways which would see a large share of their business pass to their American competitors thus enabled to charge less for the same service between common points. But it would also be harmful to the American public thus deprived of lower rates now enjoyed on differential routes via Canada, of which mention is made in the next chapter, and it would be injurious to the American railways thus to be afflicted with a falling off of interrelated traffic by reason of higher costs shouldered upon the shipper. This situation would be even worse were the Canadian railways to pay taxes on the same basis as in the United States, as will be pointed out in the next chapter. Enough has been said to indicate the unhappy effects of the overbuilding of railways in Canada on the taxpayers of that country, and the evil results in both countries that would follow an attempt to make the Canadian freight and passenger rates compensatory to the same degree as in the United States.

#### SUMMARY

It is striking that the railway systems of the two countries are so similar in their net investment per mile, volume of traffic per inhabitant, and average rates charged per ton-mile and per passenger-mile; and so different in the character of their traffic, the extent of their railway mileage per capita, and the distribution of their costs of service between shippers, passengers, and the public at large. No less striking is the fact that a third of the entire rail freight of Canada crosses the border, and in large part recrosses it, in connection with the railway systems of the United States. It will be of interest to see how the rate structure of the two countries has been developed so as to deal adequately with a situation which with the passage of time has become increasingly complex through another outstanding difference—the control of the railways of the United States through private ownership, and of Canada through mingled public and private ownership of overbuilt facilities.

the Canadian railways taxed on a basis comparable with that in vogue in the United States.

The same reasoning as this applied to the American railway rates would increase them approximately 8 per cent, with the result that the freight rate would be raised from 1.009 cents to 1.09 cents and the passenger rate from 2.02 cents to 2.18 cents.

## CHAPTER X

### RATE STRUCTURE

PHYSICAL ties alone do not bind together the railways of Canada and the United States, for without the rate structure they use in common they would in this be as bricks without straw. Some knowledge of the birth throes through which it has passed, and of its growth step by step to maturity, is therefore necessary to a full understanding of the interrelations of the railways of the two countries. No more thrilling thing has taken place in our history of the past one hundred years than the give and take and peaceful adjustment of rival forces of enormous magnitude in the field of transportation. Seaports, one against the other, in both Canada and the United States, have striven for the mastery of external trade, as have entire regions and great centers of population fought for preference in internal trade. Industries themselves, by fair means and foul, have sought for advantage over their competitors. Railways and waterways serving the same territory have engaged in battle for a traffic too small fully to satisfy them all. The needs of nationhood have entered with the demands of commerce gravely to complicate the situation. Out of this medley of conflicting motives and aspirations, coupled with advances in the art of transportation, came a series of rate wars, a gradual lowering of freight and passenger rates, the use of joint through rates and through billing by connecting carriers, the adoption of uniform methods in the determination of rates, the growth of government ownership and operation of railways in Canada, and, finally, the regulation of rates by public authority. The result has been the welding together of the railway systems of the two countries for the purposes of transportation as if there were no boundary to separate them in a political sense, marred only by the practice in Canada of fixing rates on irreconcilable bases—statutory and compensatory—with repercussions in the United States.

#### EVOLUTION PRECEDING RATE REGULATION

In the beginning there was little seriously to disturb amity between railways in respect of rates along the border. Interchange of equipment

between them was discouraged by differences of gauge or forbidden by law, the conveyance of passengers rather than freight in many instances was considered to be of primary importance, and the struggle for the through freight traffic of the West had not yet commenced. But this was changed as the first half century of railway development came to an end in the 80's. The employment by connecting carriers of joint billing, through-car lines, and joint through rates lower than the sum of local rates between the same termini increasingly fostered the movement of traffic between far-distant points. The border in this respect then ceased to exist. Track gauges were made uniform and state laws which had forbidden the connection of one railroad with another were repealed, Congress having enacted one in 1866 which expressly authorized the joining of railroads with the purpose of creating through lines of transportation. Tracks and bridges were adapted to the use of large-capacity cars and locomotives and higher speeds. Improvements in equipment and methods of operation contributed to the safety of employees and passengers and to lessened costs. Laws were repealed that had given undue advantage to canal traffic. The marvelous productiveness of the West and the rise of industry in the East, coupled with the insatiable demands for foodstuffs in Europe and at home, brought a rising tide of traffic to the five trunk lines—the Grand Trunk, New York Central, Pennsylvania, Erie, and Baltimore & Ohio roads—of which two in part traversed the soil of Canada.

The effect of this combination of circumstances was a successive lowering of the average freight rates per ton per mile from as high as 10 cents in the 1830's to but little more than  $1\frac{1}{4}$  cents in the early 1880's, and of the reduction of the average passenger fare per mile in the same period from about 5 cents to  $2\frac{1}{2}$  cents.

Unfortunately this showing, so favorable to the development of both countries, was grievously marred by recurring rate wars with their unsettling effects on commerce, the granting of secret rebates and free passes to favored shippers, fraudulent practices galore, discrimination of varying kinds, and the pooling and arbitrary division of traffic among competing carriers with an intent to create monopolies.

This situation became so abhorrent that Congress, in response to an aroused public sentiment in the United States, enacted a law for



the regulation of commerce from which the Interstate Commerce Commission came forth in 1887. This was followed by strengthening amendments in 1906, 1910, 1920, 1933, and 1935, and in Canada, where the Railway Committee of the Privy Council was granted restricted powers of rate regulation in 1888, by the establishing of the Board of Railway Commissioners for Canada in 1903, also strengthened from time to time, especially in 1919, in the interests of both carriers and the public.

### MACGRAHAM SCALE AND RATE GROUPINGS

Some thirty years prior to the inauguration of Federal rate regulation, in the mid-50's, efforts were made to adjust rates between the American West and the seaboard, about the time that the New York Central and Erie railroads had reached Lake Erie and the Pennsylvania and Baltimore & Ohio railroads had extended their rails to the Ohio River. The Grand Trunk and Great Western railways were then in their infancy and the problem was comparatively simple. But the continued expansion of the railways of both countries made necessary a form of yardstick by which rates with intelligence might be initiated and compared. And so in the 1870's the MacGraham scale was invented and put in general use. Under its provisions the distance from New York to Chicago was taken as 100 per cent and the rate to other points fixed in relation thereto on a mileage pro-rate basis, via the shortest "worked and workable" route. In brief it was a mileage scale, amended, however, in later years to provide for a terminal charge of 6 cents per hundredweight, before adjusting for distance.

With the adoption of the MacGraham scale went the division of freight rates into two main groups, of which one consisted of numbered class rates applicable to manufactured and other goods suited by their nature and value to bear a higher charge for transportation, and the other of commodity rates applicable to specified raw materials and other bulk freight of comparatively low unit value.

### CLASSIFICATION TERRITORIES

Of equal importance in the gradual building of the rate structure was the division of the two countries into interrelated classification territories and the subdivision of each of them into zones, having due

regard for the peculiar conditions there prevailing. In the United States these main divisions comprised the densely populated great industrial section known as the "Official Classification Territory," lying between the Atlantic Ocean on the east, the Canadian border on the north, the Potomac and Ohio rivers on the south, and Lake Michigan and the Mississippi River on the west; the sparsely settled wide-flung agricultural section known as the "Western Classification Territory," bounded by the Mississippi River and Lake Michigan on the east, Canada on the north, the Pacific Ocean on the west, and Mexico and the Gulf on the south; and the combined agricultural and industrial section known as the "Southern Classification Territory," lying south of the Official Classification Territory and east of the Mississippi River.

The first of these three in turn was split up into the New England Freight Association Territory, a manufacturing section lying with a few exceptions east of the Hudson River; the Trunk Line Association Territory, devoted to industry and coal mining between the Atlantic Ocean, the New England Freight Association Territory, the Canadian border, and a line passing through Buffalo, Pittsburgh, Wheeling, West Virginia, Bellair, Ohio, Kenova, West Virginia, and Roanoke, Petersburg, and Norfolk, Virginia; and the Central Freight Association Territory, frequently referred to as "differential territory," where water competition is most keen, bounded by the Trunk Line Association Territory, the Ohio River (taking in Louisville and Paducah, Kentucky), the east side of the Mississippi River as far north as Burlington, Iowa (including St. Louis, Missouri), a line thence to Chicago and along the west shore of Lake Michigan to Mackinac Strait and the east shore of the State of Michigan to Port Huron, and inclusive of the Province of Ontario lying south of the Grand Trunk Railway from Sarnia to Toronto.

The next of the three main divisions was subdivided into the Western Trunk Line Committee Territory, comprising roughly the states of Wisconsin, Minnesota, North and South Dakota, Nebraska, Iowa, Missouri, and Kansas; the Southwestern Tariff Committee Territory, embracing the states of Oklahoma, Arkansas, Texas, and Louisiana; and the Transcontinental Freight Bureau Territory, extending from the aforesaid regions to the Pacific coast.

The third main division, in which is included the Southern Freight

Association Territory, has three subdivisions—the Mississippi Valley, Southeastern, and Carolina territories.

On the other side of the border the “Canadian Classification Territory” came into being, in which was embraced the entire Dominion outside of the Yukon. Its area was subdivided into two parts: the Canadian Freight Association Territory in Eastern Canada lying east of but not including Port Arthur, and east of and including the “Soo,” Sarnia, and Windsor, in which a special rate system applies from Windsor, Sarnia, and Lake Huron to Montreal; and the Western Canada region, comprising the Prairie, Pacific, and British Columbia Lakes sections.

#### EXISTING RATE STRUCTURE

Between the three main classification territories in the United States and the one in Canada, and their various subdivisions, the closest traffic relations have been brought into existence, with the aid of the New York–Chicago MacGraham scale and its variations suited to other localities, and with the aid of the system of class and commodity rates to which reference has been made, as well as differentials agreed upon as the means of suppressing rate wars between the trunk lines serving the Atlantic ports and New England. Through the use of this machinery, under the supervision of the Interstate Commerce Commission in the United States and the Board of Railway Commissioners for Canada, a basis for a common understanding has been reached among railways from the Gulf of Mexico to Hudson Bay and from the Atlantic to the Pacific. Forces thus have been balanced which otherwise would have been mutually destructive. The existing interrelated rate structure of the two countries is the result.

#### PORT DIFFERENTIALS

In its effort to attract ocean shipping to its eastern termini at Montreal and Portland, Maine, the Grand Trunk Railway in 1857 initiated the practice of charging lower rates on its import and export traffic than on its domestic or local business. On through billing to foreign lands, in which it was the pioneer,<sup>1</sup> it was thus in a posi-

1. United States Tariff Commission, *Preferential Transportation Rates* (1922), pp. 35, 38, 299.



tion to grant to ocean carriers a larger share of the joint through rate than otherwise would be possible. Naturally the American trunk lines tapping the same great reservoir of traffic in the West were compelled gradually to meet this situation by doing likewise, impelled as they were by their own needs and by the fierce rivalries of the ports to which they owed their separate allegiances along the Atlantic seaboard as far south as Norfolk, Virginia, including principally Boston, New York, Philadelphia, and Baltimore. The ensuing rate wars, starting with the establishment of differentials in 1869 and continuing in the early 1870's, had their outcome in 1877 in a differential rate agreement between the trunk lines, which was intended

to wipe out misunderstandings due to geographical advantages and disadvantages affecting rail-and-ocean transportation, and to equalize the aggregate cost of rail and ocean transportation between competitive points in the West, Northwest and Southwest and all domestic and foreign ports reached through those cities.

Continued friction and rate wars, intensified by the entry of the Grand Trunk Railway with its own rails into Chicago, led to a modification of the agreement in the 1880's. This in subsequent years has been further changed until it has become generally recognized that on export eastbound traffic from Central Freight Association Territory Baltimore should enjoy rates 3 cents per hundredweight under those of New York, except on grain on which the cut is 1½ cents; Philadelphia 2 cents per hundredweight under New York, except on grain on which the reduction is 1 cent; and Boston and Portland the same rates as New York. Montreal in this, with some exceptions, has been placed on a par with Philadelphia and the Maritime ports, and Quebec on a par with Boston and Portland, in order that they may function as termini of the Canadian carriers during the season when the St. Lawrence is locked in ice. On import westbound traffic destined for Central Freight Association Territory, Montreal usually takes the Baltimore rates, as do Quebec and the Maritime ports.

In curious contrast the shorter haul by railways to the lower Atlantic ports from Chicago works to their advantage in permitting them to charge less, while the much greater haul by railways to the upper Atlantic ports from the same center does not work to their

disadvantage by requiring them to charge more. Trial and error have resulted in the establishment of differential rates on export and import traffic passing through the ocean gateways along the coast from Norfolk, Virginia, to Montreal, which have given to each port the volume of business to which, under normal conditions, it is deemed to be entitled by reason of its natural advantages or disadvantages, or to which it may lay claim in conformity with national policy as in the case of Quebec, Halifax, and Saint John. Briefly put, the differential rate may be looked upon as a device to distribute traffic by agreement between competitive carriers and regions. Peace therefore prevails between the rail carriers of the two countries in this outstandingly important particular, which, it should be added, has to do with external trade alone. Domestic rates at the seaboard are often on a higher basis and are governed more or less by differential considerations of another kind.<sup>2</sup>

#### DOMESTIC DIFFERENTIALS IN THE EAST

From very early days the weaker lines, that is those laboring under such disadvantages as circuitous routes and an inferior rail-and-water service, have found it necessary to charge less on competitive traffic than their all-rail rivals, or else starve. This was pointedly the case with the Grand Trunk Railway, which suffered from the handicap of a longer distance, and far less density of traffic, in its competition with the New York Central and the other trunk lines for traffic between New England and the West via Chicago and St. Louis. It was by lowered rates that it could hope to secure business, coupled with the initiation of improved methods of handling traffic, strict compliance with laws in the public interest ignored by its American competitors, and the observation of rules of courtesy.

When the Canadian Pacific Railway entered the scene in the late 1880's it, too, found it necessary to offer lower rates between New England and the West, and, like the Grand Trunk—now the Canadian National Railways—became an *all-rail* differential route on which westbound rates were established at a level materially beneath that of the more direct "standard" routes, such as the New York Central, Pennsylvania, Erie, and Baltimore & Ohio lines.

2. Additional data bearing on this topic will be found in Appendix E, p. 260, *infra*.

Still further lowerings were made in the instance of rail-and-water and all-water differential routes, both American and Canadian, between New York and Boston and the West as listed below:

All-American river-rail-and-lake line from New York via the Hudson River, Rutland Railroad, and Great Lakes; also river-canal-and-lake line from New York via the Hudson River, Erie Canal, and Great Lakes; also from Boston via the Boston & Albany and Rutland railroads and the Great Lakes.

American and Canadian ocean-and-rail line from New York via Long Island Sound, the Central Vermont Railway, and the Canadian National Railways; also from Boston via the Boston & Maine Railroad in connection with the Canadian Pacific Railway; also from Boston via the Boston & Maine Railroad and the Canadian National Railways through Depot Harbor, Ontario, to a connection with their Canada Atlantic Transit Company's line of steamers. In conjunction with these routes rates were established that joined them with rail carriers along the lower Atlantic seaboard by means of ocean steamers.

The standard routes very naturally have opposed this lowering of rates and resulting loss of traffic to their Canadian rivals; but disastrous consequences incidental to rate wars, and the influence of the American shipping public vitally interested in the maintenance of the Canadian gateways to and from the West, have given a permanent place to the domestic differential rate structure, just as they have to the port differentials. Whenever a move has been made in the United States to abolish the bonding privilege or close the border gateways to traffic on joint through rates and through billing via Canada, the shippers of Boston, Portland, and the New England states in general have allied themselves with the shippers of Chicago and the West in protest against a change so obviously to their disadvantage. For similar reasons the shippers of Canada favor the *status quo*.<sup>3</sup>

#### DOMESTIC DIFFERENTIALS IN THE WEST

In the East the vagaries of the boundary line are such as to make its crossing and recrossing inescapable in the common interest of the

3. For additional data on this subject see Appendix E, p. 260, *infra*.



people of both countries. In the West the same necessity does not exist. The boundary eastward from the Pacific is without departures from a straight line for nearly a half the width of the continent. On either side of it the transportation needs of the country, other than ordinary interchanges, may be met without necessarily encroaching upon the soil of the other. However, in its eagerness for eastbound traffic the Canadian Pacific, in its relations with American transcontinental lines, contended for and obtained the right in 1887 to establish differential rates between San Francisco and points in the Middle West via Winnipeg, utilizing for that purpose coastwise steamers between San Francisco and Vancouver. In this the transcontinental lines conceded the correctness of the general principle that in the interest of peace among them differentials—that is the right to charge an agreed percentage below the standard-rate scale—should be granted to broken rail-and-water routes, as well as to routes presumed to be inferior to others by reason of greater distances between the same termini. In this class the Northern Pacific at that time was included with the Canadian Pacific.

The standard transcontinental lines becoming dissatisfied with this arrangement in 1898, the question was referred to arbitrators who decided that the Canadian Pacific no longer should be entitled to differentials under the rates made by the United States lines.

#### OTHER DIFFERENTIALS

In other cases differentials have been agreed upon between Canadian and United States rail carriers in order that competitive traffic might be peacefully distributed. Among such instances is the traffic between Montreal and Winnipeg on which the American lake-and-rail lines are granted the right to charge less than the all-rail Canadian roads, and vice versa the latter enjoy similar privileges where their lake-and-rail routes compete with all-rail American lines between the same objectives. Through these measures American roads freely participate in purely Canadian traffic from Canadian point to Canadian point via the United States, and Canadian roads in like manner share in purely American traffic. The right to levy a lower rate on the inferior route serves to distribute the traffic and afford the shippers of both countries the choice of a less costly service where time is not of the essence.

## RATE REGULATION

Prior to 1887 in the United States, and to 1888 in Canada, the railroads of both countries were without effective rate control, although public regulation was in vogue to some extent in certain of the states of the Union. The carriers themselves sought for amity in this respect through voluntary agreements on rates and pooling of traffic which were more honored in the breach than in their observance. The enactment of the Interstate Commerce Act and its subsequent amendments, and of corresponding legislation in Canada, brought about the regularizing of joint through rates and the publication of tariffs, which, together with the suppression of abuses and frauds, lent harmony to the railway interrelations of the two countries. Early evidence of this lies in the articles of organization of the Joint Traffic Association, subscribed to by the carriers on both sides of the boundary in 1896, which were intended "to aid in fulfilling the purposes of the interstate commerce act, to cooperate with each other and adjacent transportation associations, to establish and maintain reasonable and just rates, fares, rules and regulations on State and interstate traffic. . . ."<sup>4</sup>

Previous to this much concern had been expressed in the United States, particularly in Congress in 1889 and also in 1891, and by the Interstate Commerce Commission in 1892, that on through traffic between American points via the Canadian lines, shippers might be granted rates and privileges non-accorded under the law to shippers over American lines. Of special importance in this was, and is, the long-and-short-haul provision in the Interstate Commerce Act to the effect that "railroad rates to any point may not be lower than those to a less distant point on the same route, except in a limited class of cases, and then only when special authority is secured from the Interstate Commerce Commission."<sup>5</sup> It was feared in the United States that even though this provision was voluntarily adhered to by Canadian carriers that crossed the border, nevertheless the danger was ever present that they might vary from it in private.

4. Senate Document No. 133, 55th Congress, 2d Session, p. 151.

5. Circular letter of the President of the Association of American Railroads, December 4, 1935 in Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; also Appendix E, p. 260, *infra*; also pp. 213, 215, 216, *infra*.

Arising out of this situation, and for other reasons, it was felt in both countries that consideration should be given to the joint control of international traffic rates between the United States and Canada. In consequence, the chairmen of the Interstate Commerce Commission and Board of Railway Commissioners for Canada in 1910 were designated for this purpose by the Secretary of State of the United States and the corresponding authority in Canada, respectively. They joined in the finding that

the existing laws of the United States and of Canada are inadequate for the effective control of international carriers, as respects through rates and the establishment of through routes and other matters which are proper subjects of joint regulation, and that such regulation would be mutually advantageous to the interests of both countries.<sup>6</sup>

To accomplish the desired result, applicable to rail and rail-and-water carriers, they drafted a proposed treaty in which provision was made for its enforcement and administration by an International Commerce Commission on which there should be equal representation of the two countries. In 1911 a tentative treaty embodying these recommendations was submitted by the State Department to the Canadian Government for its consideration and approval. However, nothing so far has resulted from this beyond the advice from the Canadian Government to the State Department in that year, and again in 1914, that the matter, while still in abeyance, was receiving attention.<sup>7</sup>

That an agency of this kind should be established in the interest of the railways of the two countries and of the public at large is shown by the fact that the powers of the Interstate Commerce Commission, and of the Board of Railway Commissioners for Canada, are slight in respect of international rates and practices affecting alike the shippers on the two sides of the border. It has been well said that

the number of cases in which the through regulation of a rate involves

6. Letter from Martin A. Knapp, Chairman, Interstate Commerce Commission, concurred in by J. P. Mabey, Chief Commissioner, Board of Railway Commissioners for Canada, to the Secretary of State, December 30, 1910.

7. See Appendix C, p. 247, *infra*.



dealing with the rate of both the American and Canadian carrier will steadily increase with the steadily increasing interrelation of the railway network of Canada and the United States. . . . Until such a tribunal is established, or arrangements for reciprocal action are concerted, a large body of rates remain outside the scope of regulation and are a source of disturbance to the rate tribunals of both countries. The need of some action is manifest.<sup>8</sup>

The establishment of an International Commerce Commission certainly calls for renewed consideration in the interest of the shipping public and the carriers of both countries, in respect of *all* matters affecting interrelated transportation by land, water, and in the air, including those having to do with rates, the interchange of equipment, operating rules and regulations, safety devices, needed legislation, and the accumulation and publication of statistics and other data of a cross-border character of which there is now a paucity.

It should be added that within the limitations of existing legislation the Interstate Commerce Commission and Board of Railway Commissioners for Canada work together in perfect harmony in the institution of joint through rates and tariffs and the enforcement of practices by carriers and shippers in the public interest, in so far as cross-border freight, passenger, and express traffic is concerned.

It is not alone in the field of rate regulation on a compensatory basis, as contemplated in the acts enacted for that purpose in both countries, that light should be sought on their railway interrelations. In Canada other elements have entered which have led to the fixing in that country of statutory or "compelled" rates in disregard of a compensatory return on the investment involved, either in consequence of aid extended by the Government to the rail carriers, or in conformity with a national policy in which government ownership and operation of railways play a compelling part.

#### GOVERNMENT AID

From the earliest days aid in one form or another has been given railway companies in both the United States and Canada. This was found to be necessary where national or state or municipal interests dictated the building of railways unjustified by commercial consid-

8. D. A. MacGibbon, Ph.D., *Railway Rates and the Canadian Railway Commission* (1917), pp. 231 *et seq.*

erations. Frequently this would take the form of cash subsidies and land grants; subscriptions to stock and bond issues often resulting in a dead loss; guaranties of the payment of interest and principal in connection with issues of bonds and other securities; freedom from, or reduced, taxation; protection against competition; non-regulation of rates within generous limitations; and the gift of completed or partially completed lines built at public expense.

In the United States this was done on a large scale, but not by any means to the same extent as in Canada. Collected information in this respect is not available, but it is well known that in many instances cash subsidies have been granted to railway companies by municipalities, the public credit pledged in connection with the issuance of their securities, subscriptions made to their stocks and bonds, and lines built at public expense turned over to them for little or nothing. It has been stated by competent authority that amounts granted to American railways through direct appropriations and subscriptions to securities by public agencies have summed up to \$700,000,000, in addition to land grants aggregating 155,000,000 acres.<sup>9</sup>

In Canada, aid in nearly if not all of these particulars was extended in greater or less degree to the original Grand Trunk Railway system and its later western expansion under the name of the Grand Trunk Pacific Railway. The same is to be said of the Canadian Northern Railway system and, of course, of the Intercolonial Railway and other roads built in their entirety at government expense. Mention already has been made of the aid given to the Canadian Pacific Railway in different ways, which has been variously estimated as equivalent to a sum ranging from \$62,000,000 to upward of \$215,000,000.<sup>10</sup> The Royal Commission to inquire into Railways and Transportation in Canada, in its report of 1931 (pp. 88-89), fixed this at \$104,477,495 in cash and 22,152,531 acres of land

9. William Z. Ripley, *Railroads—Rates and Regulations* (1912), pp. 37, 38. In *The American Transportation Problem* by Moulton and Associates, pp. 467, 468, the total value of lands and other aids contributed to the American railroads is estimated at \$1,070,000,000, or 4 per cent of the property investment in Class I railroads, diminished to the extent that reduced rates are granted the Government for troops, etc., and their supplies and mail.

10. Report on Transportation interests of the United States and Canada, 51st Congress, 1st Session, *Report No. 847*, pp. xxxviii, 234.

grants, or \$126,630,026 in all, if the value of the land is taken at one dollar per acre. These figures, however, do not include 10,611,846 acres contributed by the provinces or such cash subsidies and credit as they may have extended to the Canadian Pacific and its subsidiaries.<sup>11</sup> To all the railways of Canada it would appear that to and including the year 1933, 47,405,719 acres of land had been granted by the Dominion, provinces, and municipalities. If the total investment in cash or credit of the Dominion, provincial, and municipal governments in all of the railways of Canada since Confederation is considered, including the value of land grants at one dollar per acre, the figure to be taken, as reported by the Royal Commission for 1931 (p. 90), is \$2,748,704,197, equal roughly to \$65,300 a mile of road for the entire railway system of Canada.

It is in the item of taxes that Canada's aid to railways is most striking. Their average of \$205 per mile in the year 1933 is in contrast with the corresponding figure of \$1,044 per mile in the United States. The difference of \$839 per mile applied to the 43,081 miles of operated railway in Canada, yields the sum of \$36,145,000. Capitalized at 4 per cent this annual sum represents an investment of \$900,000,000. Conversely, were the Canadian tax policy to obtain in the United States and were the conditions otherwise comparable, the railways south of the border in 1933 would have been saved upward of \$215,000,000, which capitalized at 4 per cent would equal the sum of \$5,375,000,000, or more than a third of their entire bonded indebtedness.

If to the tax-aid sum of \$36,145,000 per annum is added the \$368,773,000<sup>12</sup> shown to have been borne in 1933 by shippers, passengers, and the general public according to the published income account for that year, the total sum directly and indirectly assessed for railway services against the Canadian people amounted to \$404,-

11. Still later data, furnished by the Dominion Bureau of Statistics in 1936, place the total cash subsidies—Dominion, provincial, and municipal—at \$120,493,448 and the land grants at 36,943,699 acres, thus making the aggregate aid extended to the Canadian Pacific Railway and subsidiary lines \$157,437,147, if the value of the lands is taken at \$1 per acre. In this connection it is explained that in some cases the Canadian Pacific took over certain lines years after the aid had been granted to them.

12. Gross earnings from operation \$270,278,276, plus net income debit of \$98,495,118 equals \$368,773,394.



918,000. The resulting sum per mile is \$9,399 or 50 per cent in excess of railway operating revenues per mile collected from the rate payer. Therefore, were the users of the railways in Canada required to pay the full cost of service, including taxes assessed at the same figure per mile as in the United States, the average rate per ton-mile would be upward of 1.4 cents instead of the actual rate of 0.955 cent, and the average rate per passenger-mile more than 3.4 cents, instead of the actual rate of 2.29 cents, a situation even more aggravated in its relation to the American rates of 1.009 cents and 2.02 cents, respectively, than has been set forth in the preceding chapter.<sup>13</sup>

Stated differently, the average rates paid by the users of the Canadian railways are far less than the cost of service—approximately two thirds—thus placing them on a par with the average rates in force in the United States. Government aid in respect of subsidies, assumption of deficits, and tax exemptions has made this reduction possible. The Canadian people pay the bill as the price in part incurred by them in the development of their country, commercially and in a national sense, along with the fostering of competition.

The most noticeable outcome of the adoption of this policy in Canada has been the lowering of rates on grain and other commodities in the Northwest, along with the abrogation of the Canadian Pacific's charter right of exemption from rate regulation until it was able to pay 10 per cent on its capital stock. This was done primarily in return for a cash subsidy and land grants from the Dominion Government to the Canadian Pacific Railway under the famous Crow's Nest Pass agreement of June 29, 1897, calling for the extension of that company's lines westward from Lethbridge, Alberta, to Nelson, British Columbia. Further reductions were made in this region by the same company in 1903 in return for certain concessions from the Province of Manitoba. Following this, restorations to the

13. See pp. 193, 194, *supra*. Should total debits to profit and loss be given full weight, in the case of both the Canadian and American railways, as shown in the footnote on p. 193, *supra*, the spread would be more pronounced. It is, of course, to be realized that all of these figures are very approximate, in view of the controversial aspect of many of the charges to the various accounts in both countries, as pointed out in the footnote on p. 189, *supra*, and, therefore, should be taken as merely indicative of the extent to which the cost of railway transportation in Canada is borne by the public at large rather than by the shipper and traveler. Were the tax comparison made on the basis of revenue instead of mileage, the spread would be less pronounced.

Crow's Nest Pass agreement level were effected in 1918 and then modified from time to time until in 1927 the Canadian commission directed that the Crow's Nest basis of rates, although admittedly unfair and unreasonable, should apply from *all* points on all railways in Manitoba, Saskatchewan, and Alberta to the Head of the Lakes and to Pacific coast points for export; likewise reduced rates on grain from the Head of the Lakes to Quebec.<sup>14</sup>

The rate structure in the Canadian West, therefore, is quite obviously a statutory creation not furnishing an adequate return for the service rendered, in contrast with the higher level of corresponding rates for similar distances on the other side of the border where, at least in theory, they rest on a compensatory basis. This difference has given rise to much discontent on the part of the neighboring agricultural communities in the United States which have labored in Congress to have their rate burden lessened despite the ruinous effect that would thereby be visited on the American carriers paying taxes on a scale so much higher than is in vogue on the Canadian lines and allegedly enjoying less of the fruits of past largess from the government purse.

#### GOVERNMENT OWNERSHIP AND OPERATION

Another element than government aid has had a marked effect on the rate structure of Canada and, in consequence, on that of the United States. The adoption of a policy of ownership and operation by the Government of more than a half of the railway system in Canada has involved political and economic questions which have led to the fixing of rates by legislative fiat regardless of the reasonableness of their return on the investment concerned.

It will be recalled that the publicly owned Intercolonial Railway, opened from Halifax to Rivière du Loup in 1876 and thence over the Grand Trunk to Quebec, was designed for national defense as well as for commerce. Then and since, it has been understood "that to the extent that commercial considerations were subordinated to national, imperial, and strategic conditions the cost of the railway should be borne by the Dominion and not by the traffic which might pass over the lines."<sup>15</sup> By 1917 the system thus owned and operated

14. Senate Document No. 219, 70th Congress, 2d Session, pp. 22-25.

15. Hearing before the Committee on Interstate Commerce, United States

by the Dominion, including the National Transcontinental Line, had grown to embrace 4,393 miles, to which was added in that year the 9,559-mile system of the Canadian Northern Railway, including the 355 miles owned by the Northern Pacific in Manitoba which in 1901 had been taken over by the provincial government under a long-time lease. In 1918 this aggregation of 13,952 miles of government lines became known as the "Canadian National Railways," and at the end of 1922 the Grand Trunk group, including its Pacific extension, completely came under the wing of the Government, increasing the total to approximately 22,000 miles.<sup>16</sup> By 1933 the Canadian National Railways had grown in stature until in Canada and the United States they embraced a unified system of 23,750 miles under a single management, with a capitalization in excess of three billion dollars.<sup>17</sup>

As indicative of the policy that governs the operation of this giant system, attention is drawn to the terms that were originally agreed to by the Grand Trunk Pacific Railway in 1903, in return for aid extended to it by the Government "for the express purpose of encouraging the development of Canadian trade and the transportation of goods through Canadian channels." All freight originating on its main line or branches and destined for points in Canada is required to be carried entirely on Canadian territory or between Canadian inland ports, unless specifically routed otherwise by the shipper. Furthermore, the through rate on export traffic from point of origin to point of destination must at no time be greater via Canadian ports than via United States ports, traffic not specifically routed otherwise by the shipper to be carried to Canadian ocean ports. The railway bound itself in good faith to carry out this purpose and not to advise or encourage the transportation of such freight by other routes.<sup>18</sup>

Senate, 70th Congress, 2d Session, on S. J. Res. 67, pt. 2, February 1, 1929, p. 52; also Senate Document No. 219, 70th Congress, 2d Session, p. 25.

16. *Report of the Royal Commission To Inquire into Railways and Transportation in Canada, 1931-32*, p. 85. The Grand Trunk became a wholly owned and operated government utility in 1921, but it was not until the following year that directors of the Canadian Northern Railway Company and Canadian National Railways were put in charge and the complete amalgamation with the Canadian National Railway Company effected in 1923.

17. *Statistics of Steam Railways of Canada, 1933*, pp. 52, 60.

18. Senate Document No. 219, 70th Congress, 2d Session, pp. 24, 26.



In conformity with these policies, designed as they were and are to promote the welfare of Canada in a national sense regardless of a return on its railway investment, the Canadian National Railways in 1927 were directed by law to reduce their rates by 20 per cent on all traffic on its Eastern Lines, east of Diamond Junction and Lévis, Quebec, and on certain preferred westbound movements of commodities out of the eastern provinces. Any deficits resulting from this action on the lines east of Quebec and Lévis were to be included in the annual estimate submitted to Parliament in behalf of the Canadian National Railways. Likewise, other railways complying with the terms of the act in that region were authorized to present a bill to Parliament for their losses in so doing. Under the wording of the act the rates specified "shall be deemed to be statutory rates, not based on any principle of fair return to the railway rendered in the carriage of traffic."

In all of Canada, therefore, on the privately owned roads as well as on the government-owned lines with which they have to compete, the rate structure is deeply tinged with the element of statutory rates "based not upon reasonableness, but upon the determined governmental policy and non-economic factors."<sup>19</sup> This cannot otherwise than play an important part in the making of joint through rates with carriers in the United States where in theory the principle of reasonableness goes with private ownership, nor can it otherwise than affect shippers in the United States, such as farmers in the Northwest, who are charged more in their country than are shippers in Canada for the transportation of similar goods for equal distances. The internal trade of the United States and the interests of the holders of the securities of the railroads of that country are, of course, vitally influenced by the rate conditions prevailing on the railways of Canada with which they are so closely interrelated. As will be shown later, however, it does not appear that in respect of the diversion of traffic from and to the ports of Canada and the United States, any grounds exist for apprehension on that score so far as the welfare of either is concerned.

#### PANAMA CANAL

The opening of the Panama Canal in 1914 brought about two

19. Senate Document No. 219, 70th Congress, 2d Session, pp. 24, 26.

changes of tremendous import in the railway situation in both countries. In the United States the railways were compelled to give up their ownership of steamships by means of which they had hitherto controlled or influenced rates, while Canadian rail carriers were undisturbed in that respect. But it was in the cheapening of transit by water from coast to coast, in connection with the provisions of the long-and-short-haul clause of the Interstate Commerce Act,<sup>20</sup> that a revolutionary change was made to the grave disadvantage of the mid-continental area. The cost in cents of carrying a ton of staple goods, over the cheapest route in each case, was 1,904 cents from New York to San Francisco before the War, compared with 1,680 cents in 1926—a *reduction* of 12 per cent—whereas from Chicago to the Pacific coast in the same period the rate *increased* from 2,610 cents to 2,946 cents or 13 per cent. Stated differently, Chicago in 1926 had moved 336 cents away from the Pacific coast while New York had moved 224 cents nearer. In that time, ocean rates having remained about the same, Chicago, illustrative of similar conditions throughout the Mid-West, had moved 594 cents away from the markets of the Atlantic seaboard and South America. The same may be said for the corresponding situation in Canada. The natural transportation disadvantages of the interior of the continent, in the importation and exportation of commodities including wheat and other grains, thus have become intensified. Out of this has been born the move to create a seaway<sup>21</sup> from the mouth of the St. Lawrence River to the head of Lake Superior by overcoming the minor obstacles—comparatively speaking—which now bar the ocean vessel from penetration to the heart of the continent.<sup>22</sup>

The importance of this is shown by the extent to which exportations of Canadian wheat through the Dominion's Pacific ports have

20. See p. 204, *supra*, and pp. 215, 216, *infra*.

21. Many consider that the repeal of the long-and-short-haul clause of the Interstate Commerce Act, as now proposed in Congress, will in large part accomplish the same purpose by affording interior points the benefit of water competition through lower rates to and from either coast than to and from intermediate points. Others fear that the resulting discriminations will bring about a general lowering of the rate structure, to the grave injury of the railroads.

22. Senate Document No. 183, 69th Congress, 2d Session, p. 2.

increased in recent years, as compared with those through its Maritime and St. Lawrence River ports, thus:<sup>23</sup>

TABLE 46

*Canadian Wheat Exports via Canadian Seaports, 1921 to 1933*

Crop years*	In 1,000 bushels via			Total	Per cent via Pacific ports
	Atlantic ports	Pacific ports	Hudson Bay		
1921-22	34,735	7,837	..	42,572	18.4
1922-23	69,045	17,830	..	86,875	20.5
1923-24	67,618	53,285	..	120,903	44.1
1924-25	44,723	23,992	..	68,715	34.9
1925-26	89,553	52,955	..	142,508	37.2
1926-27	92,234	39,934	..	132,168	30.2
1927-28	97,998	86,597	..	184,595	46.9
1928-29	131,994	97,958	..	229,952	42.6
1929-30	44,025	49,146	..	93,171	52.7
1930-31	74,079	74,542	..	148,621	50.2
1931-32	60,044	74,915	545	135,504	55.3
1932-33	99,024	96,484	2,736	198,244	48.7

\* As of August 31 in 1921-22 and 1922-23, for eleven months ended July 31 in 1923-24, and as of July 31 thereafter, in both this and the succeeding table.

From this it will be seen that wheat shipments from the Prairie Provinces of Canada have steadily increased in their westerly movement through the Pacific ports, principally Vancouver, rising in the twelve crop years from 18.4 per cent to 48.7 per cent of the total movements through all of the Canadian ports. Lower rail-and-ocean rates via the Pacific coast and the Panama Canal have thus prevailed over rail-lake-river-canal-and-ocean rates via the Atlantic seaboard, on wheat going to the foreign market from the provinces of Saskatchewan and Alberta.

That this situation also affects the American carriers is shown in Table 47, in which wheat shipments through Vancouver and the other Pacific ports are contrasted with the total exportations of Canadian wheat through both Canadian and United States seaports during the same period.<sup>24</sup>

23. Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36—letter in "Public Authorities" file from R. H. Coats, Dominion Statistician of the Dominion Bureau of Statistics, March 12, 1937.

24. Correspondence respecting Railway Interrelations of the United



TABLE 47

*Canadian Wheat Exports via Seaports of Both Countries,  
1921 to 1933*

Crop years	Via Canadian ports*						Via U.S. ports*		All ports both countries 1,000 bushels
	Pacific coast		Others		Total		1,000 bushels	% all ports	
	1,000 bushels	% all ports	1,000 bushels	% all ports	1,000 bushels	% all ports			
1921-22	7,837	5.5	34,735	24.4	42,572	29.9	100,009	70.1	142,581
1922-23	17,830	8.2	69,045	31.9	86,875	40.1	129,871	59.9	216,746
1923-24	53,285	20.5	67,618	26.0	120,903	46.5	138,783	53.5	259,686
1924-25	23,992	16.7	44,723	31.1	68,715	47.8	75,071	52.2	143,786
1925-26	52,955	20.0	89,553	33.8	142,508	53.8	122,585	46.2	265,093
1926-27	39,934	16.4	92,234	37.8	132,168	54.2	111,475	45.8	243,643
1927-28	86,597	30.9	97,998	35.0	184,595	65.9	95,541	34.1	280,136
1928-29	97,958	28.4	131,994	38.4	229,952	66.8	114,412	33.2	344,364
1929-30	49,146	33.1	44,025	29.6	93,171	62.7	55,289	37.3	148,460
1930-31	74,542	33.8	74,079	33.6	148,621	67.4	71,828	32.6	220,449
1931-32	74,915	42.0	60,589	34.0	135,504	76.0	42,827	24.0	178,331
1932-33	96,484	40.2	101,760	42.4	198,244	82.6	41,587	17.4	239,831

\* Provision made for re-routings.

As will be noted the export movement of Canadian wheat through United States ports has fallen off to a marked degree, namely, from 70.1 per cent in 1921-22 to 17.4 per cent in 1932-33, with a corresponding increase through the Canadian ports, of which those on the Pacific coast have been the chief beneficiaries in the rise in that period from 5.5 per cent to 40.2 per cent of the total export movement. The effect of the Panama Canal in this has been the reverse of helpful to the railways of the United States serving as outlets for the products of Canada.

Along with the Panama Canal rate influence on the diversion of Canadian wheat shipments from the established Atlantic ports of Canada and the United States to the Pacific ports, is the hoped-for similar influence that is expected to follow the enhanced use of the rail route northerly to Churchill on Hudson Bay and the completion of the deepened channel in the Mississippi River to the Gulf of Mexico. Along with these seekings in the mid-continent, on both sides of the border, for cheapened channels of trade leading to the sea—north, south, and west—go the efforts that are being made to

States and Canada, 1935-36—letter in "Public Authorities" file from R. H. Coats, Dominion Statistician of the Dominion Bureau of Statistics, March 12, 1937.

restore its eastern outlet to favor by opening the proposed low-rate St. Lawrence—Great Lakes seaway for the use of ocean vessels in competition with the Panama Canal route. The old battle of the waterways is taking on new life, in which the Panama route is having the effect of diverting traffic from the transcontinental railways of both countries to their steamship rivals, and of favoring coastwise industries at the expense of their inland competitors.<sup>25</sup>

All this is, of course, of vital importance to the rail carriers of both countries, affecting as it does their present and prospective volume of traffic and lengths of haul under the new conditions, and the relation of their rate structure to that of the water carriers with which it is to be hoped that they will work in harmony for a common end.<sup>26</sup>

#### DIVERSION OF EXPORT AND IMPORT TRAFFIC

The feeling has long persisted in the United States that more favorable rates were in force between points in the United States and Canadian ports than between the same points and United States ports, that more stringent regulations in certain particulars were in vogue at the United States ports than in Canada, that preferential customs regulations in Canada conceded lower tariffs on importations into Canada through Canadian ports than through United States ports, and that preferential schedules of other ports of the British Empire yielded better treatment to products of the United States routed through Canadian ports than to those shipped from United States ports. In Canada exactly the same concern has been felt that for reasons of this kind, or others, Canadian commerce was being diverted to American ports.

This situation became such that in 1929 the President of the United States transmitted to the Senate a report<sup>27</sup> of the Secretary of State, the Secretary of Agriculture, and the Interstate Commerce Commission, in response to its resolution requesting an investigation of factors of the kind here mentioned, which were said to contribute to the diversion of commerce from ports of the United States to

25. See pp. 204, 213, *supra*.

26. Additional information on this subject will be found in Appendix E, p. 260, *infra*; also in Proceedings of the *Canadian Political Science Association* (1932), pp. 213 *et seq.*

27. Senate Document No. 212, 70th Congress, 2d Session.

Canadian ports. In the report it was shown that from 1921 to 1928, measured by value in dollars, the percentage of imports and exports of the United States moving through Canada to the total thereof, exclusive of those to and from Canada, was practically constant, ranging from a low of 3.2 per cent to a high of 4.8 per cent in any one year. No pronounced tendency in this was shown either favorable or adverse to American ports, or for that matter to Canadian ports. In respect of imports and exports of Canada moving through the United States, however, an increase was shown from a low in 1919 amounting to 18.2 per cent of Canada's total thereof, exclusive of those to and from the United States, to a high in 1926 amounting to 29.7 per cent, falling to 26.6 per cent in 1928. The position of the American ports as regards value of Canadian commerce handled through them had materially improved. As between the two countries in the year ended March 31, 1928, "Canadian ports obtained only 4.8 per cent of the total trade of the United States with countries other than Canada, while American ports obtained 26.6 per cent of the trade of Canada with countries other than the United States." It was said that this comparison in some respects was misleading, but it was the best that could be brought forth from the data then available. Conditions since then have changed due to the increasing diversion of Canadian wheat shipments from eastern channels to the Pacific coast and thence through the Panama Canal to Europe. Figures bearing this out will be found in the parentheses below.

#### EXPORT TRAFFIC

In breaking down the figures that led to these conclusions it was found that exports from the United States moving through Canada had remained almost constant at percentages ranging from 3.1 to 5.8 per cent, but that those of Canada moving through the United States had increased materially, namely, from 19.2 per cent of the value of the total Canadian exports in 1919, exclusive of those to the United States, to 38.7 per cent in 1928 (14.4 per cent in 1934).

On the whole it was thus found that in respect of export traffic the situation was distinctly favorable to the ports of the United States, due in large part to the movement through them of Canadian grain far in excess of the movement of American grain through Canadian



ports. During five crop years (1922-23 to 1926-27) an average of 135,296,000 bushels of Canadian grains annually were exported from North Atlantic ports in the United States against 53,000,000 bushels of American grains handled through Canadian ports. In fact the bulk of the grain exported from the Port of New York, as well as from Boston and Portland, Maine, was of Canadian origin, while substantial proportions of the exports from Philadelphia, Baltimore, and Norfolk, Virginia, were of similar origin. In some years the exports of Canadian wheat from the Port of New York equaled or exceeded the exports of Canadian wheat from the Port of Montreal. American wheat in turn moved in considerable volume through the St. Lawrence and Atlantic seaboard ports in Canada.

The question of rates appears to have little or nothing to do with this reciprocal movement through the two countries, by rail, lake, river, and canal. In the case of Canada the grain movements are almost entirely via rail from the Prairie Provinces to Port Arthur and Fort William at the head of Lake Superior, thence by steamer to Georgian Bay ports and beyond by rail to Montreal and the Maritime ports and New England, or from the head of Lake Superior by steamer to Montreal via Port Colborne and Buffalo and to ports on the south shore of Lake Erie where connection is made with United States rail and canal carriers. In the case of the United States the grain movements are from a variety of origins in the West all the way by rail to the Atlantic seaboard or to ports on the Great Lakes from which the movement is by steamer to Montreal direct or via Buffalo, or to Buffalo and other Lake Erie ports for transshipment to canal and rail carriers leading to the seaboard. United States grain also moves to Gulf and Pacific ports as does Canadian grain to the latter. Other freight than grain, such as meats and packing-house products and other materials moving on class rates, iron and steel products, etc., crosses and recrosses the border on its way to foreign parts.

The reciprocal movements through the two countries to the eastern ports were reported to be on a substantial rate parity in like channels of transportation. Other considerations than rates, therefore, govern in a selection of alternative routes. New York has the advantages of frequent sailings to all parts of the world, regular lines of steamers offering spare cargo space at very low rates, a large reser-

voir of tramp shipping subject to call, year-round operation unchecked by winter conditions, amplitude of port facilities albeit costly in operation, and comparatively low insurance rates on hulls and cargo of ocean vessels, in all of which the ports of Boston, Philadelphia, Baltimore, and Norfolk, Virginia, participate to a lesser degree. Montreal during the open season has the counteracting advantage of standing at the gateway of a cheaper and more direct line from the crest of the traffic-shed in the West to foreign markets, coupled with superior facilities for the handling of grain and other freight within the limits of their capacity. Quebec, Halifax, and Saint John suffer from excessive distance of haul compared with the other ports, to meet which the rates in force have been arbitrarily fixed at a non-compensatory level. Rival routes through both countries to the Atlantic seaboard profit from seasonal changes affecting the St. Lawrence route. The maturing of crops in the United States is sufficiently early to enable them to be moved by water through Canadian channels to Montreal, and in Canada so late as to call for their movement by canal and rail to tidewater in the United States after the Canadian water outlet is closed to navigation.<sup>28</sup>

28. From *The St. Lawrence Problem*, by Lesslie R. Thomson (p. 17), and from information supplied by Col. Frederick S. Greene, Superintendent of Public Works of the State of New York, the following table has been prepared giving a twenty-year average of opening and closing dates of navigation:

Region	Date of opening	Date of closing	Time in days	Time in weeks	Time in months
Great Lakes above Welland Canal	Apr. 18	Dec. 19	245	35	8.0
Welland Canal	Apr. 18	Dec. 16	242	34.5	7.9
Erie Canal (19-year average)	Apr. 21	Dec. 12*	235	33.5	7.7
St. Lawrence River and canals above Montreal	Apr. 26	Dec. 9	226	32.3	7.4
St. Lawrence River below Montreal (10-year average)	Apr. 28	Dec. 7†	222	31.7	7.3

\* Official date, November 30. † Average date of departure of last ocean vessel.

From this it will be seen that, on the average, the outlet below Montreal to the sea is closed to inland navigation for a period of more than three weeks (23 days) while the Great Lakes above the Welland Canal are still open, during say a half of which the Erie Canal is open for water transport, and the remaining half for rail transport, to warm-water North Atlantic ports. Therefore, on the average prior to December 7 in the fall of each year, export grain by rail and water from the American West and Northwest may

What has been said in respect of export traffic applies to that moving eastward to the Atlantic seaboard. In the other direction export as well as domestic rates from United States points to Vancouver were reported to be no less than those to home ports on the Pacific coast. However, westbound rates on grain from points in the United States to United States Pacific coast points were said to be materially lower than those from the same points to Canadian Pacific ports. From Canadian producing points the rates to United States ports on the Pacific coast were declared to be considerably higher than those to Canadian Pacific coast ports. Nothing was then found in the rate structure to Pacific ports that would tend to divert any grain to Canadian Pacific coast ports.

This investigation did disclose the need for a more uniform practice in the inspection of grain in the two countries, for which a conference between their representatives was proposed; and some discrimination was discovered against trade with Australia through American ports which to a large degree was then cured.

Since the above-mentioned report was rendered in 1929 the export-grain situation has gone through the pronounced change set forth in previous paragraphs, due to the continued diversion westward of freight to the Pacific coast and thence through the Panama Canal to Europe. Canadian wheat in particular has taken this course from Saskatchewan and Alberta to Vancouver, at the expense of New York and other United States ports on the Atlantic seaboard. It is to be expected, therefore, that the showing in favor of Canadian exports through American channels has been substantially altered of late years by reason of the Panama Canal rate structure and the

continue by the cheap water route through Canada to Montreal, following which the later maturing Canadian export grain moved by rail to the Head of the Lakes may continue by water to the foot of Lake Erie and thence to tide over American soil by canal and rail until the close of navigation on the Great Lakes, averaging December 19 in each year. In the spring the grain movements on the Great Lakes may start, on the average, as early as April 18 while the outlet to the sea below Montreal is locked in ice until April 28, thus in the interim throwing the export movement as desired to the Erie Canal and rail routes leading through the United States to tide along the North Atlantic coast. In this the interrelated railways work in unison with the inland water links best to meet the climatic conditions with which the two countries jointly have to cope.



continuing efforts of Canada in pursuance of her policy of favoring her government-owned trade channels for the movement of her own products to her own ports.

### IMPORT TRAFFIC

The report to which reference has been made also showed that there had been little fluctuation in the flow of imports into the United States moving through Canada, the percentage of total United States imports from countries other than Canada ranging from a low of 2.8 per cent in 1921 to 5 per cent in 1922 and 3.8 per cent in 1928. On the contrary, imports into Canada moving through the United States disclosed a falling ratio, from 29.7 per cent in 1901 to 6.8 per cent in 1921 and to 3.1 per cent in 1928 (1.9 per cent in 1934<sup>29</sup>). In a word, the position of American and Canadian ports in respect of imports appeared to be less favorable to American ports than was the case with exports. The reasons for this are not far to seek.

In the fixing of port differentials the Canadian ports in the East are placed on a lower rate level for imports than for exports so far as their relations to the United States ports are concerned. To points west of the Buffalo-Pittsburgh line the import class rates and the import rates on general commodities from Montreal, Saint John, and Halifax are made the same as from Baltimore and, therefore, somewhat lower than the corresponding rates from Boston, New York, and Philadelphia, whereas, it will be recalled, parity with Philadelphia was established in the case of exports. Then, too, import rates from Canadian ports, particularly those to Chicago, showed the influence of import rates from New Orleans. Again the direct route of the Canadian National Railways from Canadian ports to Chicago has had a material effect on the import rate structure, in connection with which it should be borne in mind that the Canadian carriers have applied the Montreal basis of rates from Halifax and Saint John to the West because of the closing of navigation in the St. Lawrence for six to seven months of the year. It should be added that

the board of railway commissioners (for Canada) and the Canadian courts have justified lower rates on imported traffic than on like domes-

29. *The Canada Year Book, 1934-35*, p. 631; also source of the 14.4 per cent on p. 217, *supra*.

tic traffic on the principle that the rates had to be lower or this traffic would move to American ports and over the American railroads, and that the lower rates help to offset the disadvantage brought about by higher marine insurance charges applying on the Montreal route than on the routes to and from the American ports.<sup>30</sup>

Considerations other than rates have contributed to the steady decline of Canada's importations via the United States since the beginning of the century, such as prompter movement of silk from Vancouver than from Seattle, Canadian customs preferences on importations through Canadian ports direct, the increase in the mileage of steam railways in Canada, the remarkable growth of the ocean fleets of the Canadian Government<sup>31</sup> operating in conjunction with its vast railway system and of the Canadian Pacific's similar provision of ocean carriers for feeding its railway system with traffic, the gaining of cargoes for immigrant-carrying ships from Europe to Canada, and the rapid improvement and development of Canada's own ports and their fine facilities for handling Canada's own import traffic.<sup>32</sup>

In imports as in exports Canada has consistently followed her policy of holding her trade as far as possible to her own channels, in which, of course, the privately owned Canadian Pacific system works to the same end as its government-owned competitor. Rates in this are not necessarily compensatory, as witnessed by the haulage of freight for hundreds of miles between the upper Atlantic ports and Montreal without an extra charge, and by the statutory reduction of westbound rates in the region east of Quebec and Lévis.

### AVERAGE RATES

After all is said and done the curious fact remains that average freight and passenger rates in the two countries are in each case almost identical, as pointed out in Chapter IX. In the year 1933 the average freight rate of 1.01 cents per ton-mile in the United States compared with 0.96 cent in Canada; and the average passenger rate

30. United States Tariff Commission, *Preferential Transportation Rates* (1922), p. 45.

31. The Canadian Government Merchant Marine vessels are reported to have been sold.

32. Senate Document No. 212, 70th Congress, 2d Session, pp. 42, 43.

of 2.02 cents in the United States with 2.29 cents in Canada. In part this may be explained by the fact that the higher rates on grain for export in the United States apply to the much smaller proportion of products of that nature handled in that country than in Canada; also by the fact that traffic as a whole is carried at a loss borne by the taxpayer in Canada, as shown in some detail in previous paragraphs.<sup>33</sup> In both countries, too, the fact stands out that freight rates still remain at boom-time levels, awaiting an inevitable adjustment to the same economic forces to which sister industries have had to bow.<sup>34</sup>

### SUMMARY

Rates, it will be observed, have fully as much to do with the railway interrelations of Canada and the United States as their physical connections at the border. In the weaving of their rate structure similar methods are employed. Through the establishing of joint through rates every part of each country is put in touch with the other as though no border were there to separate them. Adjustments have been made in rates to competitive points so as to obviate rate wars. The regulating bodies in the two countries work in complete harmony within the limits of the laws which govern them. The drastic change in the rate relation of the Atlantic and Pacific coast railways to each other and to the mid-continent, through the building of the Panama Canal, has affected the rail carriers of both countries alike, and brings them face to face with the problem of dealing wisely with the proposal to rejuvenate the interior of the continent by means of cheaper access to the sea.

Finally, the rail carriers of both countries are confronted with grave difficulties inherent in the application of warring principles in the conduct of their interrelated affairs—the fixing of compensatory rates under private ownership and operation at a sufficiently high level to defray the costs of operation, taxes, and a reasonable return on the capital invested, all three to be passed on to the general public through the rate; *versus* the establishment of statutory or fiat rates under government ownership and operation, or under closely regulated or heavily subsidized private ownership and operation, without regard for those three elements of expense, on the theory

33. Pp. 187, 193, 209, *supra*.

34. See p. 187, *supra*.



that deficiencies so resulting are to be borne by the investor or assessed against the general public through taxation.

Just as the Union at the time of the Civil War, in the words of Lincoln, could not continue half slave and half free, so the interrelated railways of the United States and Canada cannot indefinitely follow courses so diametrically opposed. Caught between the millstones of *rising* salaries, wages, taxes, costs of material, expenditures for unremunerative services, and outlays of capital yielding little or no financial reward, and *falling* freight and passenger rates in response to the strenuous appeals of shippers and the demands of competition in many fields,<sup>35</sup> the investors' return is being ground to dust.<sup>36</sup> On top of this are threatened increases in costs of operation,

35. The disastrous effect of motor competition on railway rates, applicable to both countries and therefore to their interrelations, is strikingly brought out by Parker McCollester, LL.B., and Frank J. Clark in their book entitled *Federal Motor Carrier Regulation*, from which a quotation appears in Appendix H, p. 273, *infra*. Further evidence to this effect is given in an editorial entitled "Rail-Highway Coordination" in the *Wall Street Journal* of August 29, 1936, in which attention is called to the sanctioning by the Interstate Commerce Commission of a special freight rate on mixed carloads of various commodities between Chicago and the Twin Cities, at from 36 per cent to 62 per cent of the existing specific rates thereon, this drastic reduction having been brought about by competition resulting from the establishing of joint motor-truck-and-rail service between those termini. As the *Wall Street Journal* says, "What has taken place in the Northwest at least suggests that the growing coordination of rail and highway transport will cheapen transportation . . .," of course to the advantage of business interests and the public at large, but to the disadvantage of the private investor in railways. Equally unhappy influences on the interrelated rate structure, from the private investor's angle, are to be found in other kinds of competition on land, water, and in the air with which the railways of the two nations have to cope. Pipe lines for gas, crude oil, and gasoline, and distributing systems for electricity, are playing no small part in the supplanting of coal by rival sources of energy moving other than by rail.

36. That this statement is not overdrawn may be proven by a glance at the records of the past. From 1916 to 1935 the total property investment in Class I railways in the United States has *increased* nearly 50 per cent from \$17,636,722,230 to \$25,714,360,369, or more than eight billion dollars; the total annual operating revenues have fallen very slightly from \$3,596,865,766 to \$3,451,929,411; and the annual net railway operating income alas has *decreased* over 50 per cent from \$1,040,084,517 to \$499,819,118. Despite the enormous addition to the investment account, the amount saved for the in-

through the proposed enactment of laws requiring enlarged train crews, the arbitrary reduction of the number of cars in trains, and the observance of a six-hour day.

With the private purse, because of this black outlook, no longer directly to be drawn upon in large measure and on sound terms for the future improvement and expansion of the railways of the two countries as a whole, their Governments, in the public interest, obviously must in the long run supply their financial needs. Non-compensatory rates continued to their logical end, whether through government edict or the compelling effects of competition, cannot otherwise than bring this about. It is a problem affecting the inter-related railway systems on both sides of the border, in which the matter of rates is the deciding factor.<sup>37</sup>

vestor from every dollar of gross receipts has dropped in this period from 29 cents to 15 cents because of increases in operating ratios, rentals, and taxes. From a "net railway operating income" return of 5.9 per cent on the property investment in 1916 the yield has fallen to 1.9 per cent in 1935, the average for the twenty years having approximated but 3.4 per cent. Stated differently, in this period railway investors have received nothing whatever on their added contribution of some eight billion dollars, already ground to dust, and now look with sorrow on the halving of what they possessed at the start. Testimony to the same effect is to be found in the Canadian records, tempered there, however, by the aid brought in part to railway investors by the Dominion Government.

See *Statistics of Railways of Class I, U.S. 1916-1935*, issued by the Bureau of Railway Economics in 1927 and 1936; *Statistics of Steam Railways of Canada, 1933*; and *Canada Year Book, 1934-35*.

In this connection it is illuminating to note in the subjoined table prepared from data in the *Wall Street Journal* of December 24, 1936, that the total of public utility, industrial, and real estate bonds and notes in default has *decreased* 39.2 per cent since its peak in 1933, while the total for railroads in the same period has *increased* 82.6 per cent instead of decreasing as times improved!

	1933	1936	Change	
			Increase	Decrease
Railroad securities in default	\$1,483,519,390	\$2,709,781,000	82.6%	..
Public utility, industrial, and real estate securities in default	2,753,454,690	1,675,826,000	..	39.2%
Total	\$4,236,974,080	\$4,385,057,000	3.5%	..

37. Further remarks on the railway ownership problem will be found in Appendix J, p. 279, *infra*.

## CHAPTER XI

### RÉSUMÉ

IN now looking backward at a long array of facts and figures, the intimacy of border contact between the United States and Canada stands out in bold relief. It truthfully may be said that it is without a parallel in the history of man. Within a comparatively short distance from their common border, 4,000 miles in length from sea to sea, are their greatest cities, their more thickly settled communities, their richest mines and their most fruitful fields. Serving these neighboring scenes of intense activity are navigable waterways of the first magnitude descending east to the Atlantic Ocean, south to the Gulf of Mexico and north to Hudson Bay. Binding them together with bands of steel are some 300,000 miles of railroad, sufficient to encircle the globe a dozen times, which are closely interwoven at the border through fifty gateways. Through these border eyelets more than 7,300 miles of Canadian controlled railways in the United States are linked with their parent systems on the north; and over 1,500 miles under American control in Canada are similarly joined with their systems on the south. The vast network of railways reaching by land in all directions to the remote corners of both countries is thus made an indivisible whole.

The present day situation is, of course, the result of an evolution in transportation since the discovery of the mighty St. Lawrence by Jacques Cartier four hundred years ago. Two and a half centuries of birchbark canoe, sailing vessel, flatboat, pack train, wagon, and stagecoach were to elapse before the newly arrived steamboat and the banishment of the Indian westward, in the closing decades of the eighteenth century, were to give impetus to a remarkable growth of population in the valley of the Ohio and then belatedly along the shores of the upper St. Lawrence and Great Lakes. At the end of another fifty years, three hundred years after the appearance of the white man at the site of Montreal, came the steam locomotive which was gradually to thread its way along the courses laid out by the buffalo and the Indian and later traversed by explorers, missionaries, and traders of France, and their English and American successors,



who so courageously opened the way for the pioneer. The thirty years that followed were to witness the steady progress of the iron horse across the eastern and middle states, and its perfection as a means of land transportation, until it usurped the power of the steamboat in the valley of the Mississippi and turned the tide of traffic of the Ohio and upper Mississippi from its outlet on the Gulf of Mexico to the ports of the upper Atlantic Ocean and St. Lawrence. Victory in the battle of the waterways thus went to the northeastern outlets to the sea in the 1850's through the agency of the American railway in furtherance of the earlier influence of the Erie Canal.

At this juncture the Canadians awakened to the advantages to be gained by supplementing their admirable system of inland waterways with railways connecting their winter-bound ports with the warm-water seaports of the United States, and by sharing in the rapidly growing traffic of the American Middle West. The first train between the two countries ran from Montreal via Rouses Point, New York, to Boston in 1851, followed by the opening of the route from Montreal to Portland, Maine, in 1853, from Boston and New York via the Great Western Railway of Canada across the peninsula of Ontario to Chicago in 1855, and from Montreal over the Grand Trunk Railway to the border at the St. Clair River in 1859, and thence to Chicago in 1881. The Canadians did not stop there. With the birth of their Confederation in 1867 the need more than ever was seen for cementing together their provinces in nationhood by means of a transcontinental railway entirely in their own domain. Out of this came the Canadian Pacific in the late 1880's, a few years after the Northern Pacific in 1883 had been connected through on American soil from the Head of the Lakes to the waters of the Pacific, and a generation after the Central Pacific-Union Pacific route across the western plains and Rockies had given the United States a closing link in its first continuous line of rails from the Atlantic to the Pacific in 1869.

The early years of the 1890's—1893 to be exact—saw the driving of the last spike in the Northern Pacific's transcontinental rival, the Great Northern Railway, about the same time that the growth of the railway mileage in proportion to population in Canada had caught up with and passed that of the United States. Then the first years of the twentieth century were marked by the commencement of the ex-

tension westward of the Grand Trunk system to the Pacific, the building of the National Transcontinental line eastward from Winnipeg to the Maritime Provinces, and the expansion of the Canadian Northern system from the Prairie Provinces to both coasts. In the middle of the present century's second decade the three independent Canadian transcontinental systems were in existence—the Canadian Pacific, Canadian Northern, and Grand Trunk—with three by-passes through the United States via the “Soo” and Chicago, coupled with short cuts across the states of Maine and Minnesota. In the United States there were two transcontinental lines directly within the border influence west of the Great Lakes—the Northern Pacific and Great Northern—with many eastern outlets through the United States of which three—the New York Central, Wabash, and Pere Marquette—traversed the soil of Canada between the Detroit and Niagara frontiers. In the 1920's came the acquisition by the Canadian Government and consolidation of the Grand Trunk, Grand Trunk Pacific, and Canadian Northern under the name of the Canadian National Railways, and to the latter were handed over, for unified operation, the Canadian government railways, i.e., the Intercolonial and Prince Edward Island railways.

During the long space of time when the east-and-west railway routes on each side of the border were being brought into existence, north and south links between them were created and radiating lines, too, connecting them with all sections of both countries. Their traffic, whether in transit between points in one country over the intervening territory of the other, or from one country to the other for domestic consumption, or to and from countries overseas, now passes the border as freely as from state to state and from province to province. In the Northeastern Region, where the New England states adjoin the provinces of New Brunswick and Quebec, somewhat more than 5,600,000 tons passed through 16 gateways in 1933; in the Great Lakes Region more than 23,100,000 tons, through 13 gateways; and in the Northwestern Region nearly 8,200,000 tons, through 21 gateways. Through the 50 gateways nearly 37,000,000 tons flowed in a year when the volume of cross-border business was about half that of the pre-depression era. In the order of their importance the Niagara and Detroit–St. Clair gateways are far in the lead, with those of the Northwestern Region taking second place and

the ones in the Northeastern, third. Records are not available as to the proportion of the total cross-border tonnage that is of a purely interchange character, but as nearly as can be estimated it would appear that in 1933 it amounted to some 9,000,000 tons, or say a quarter of all. As the remaining 28,000,000 tons passed from points in either country over the territory of the other, they reflect a double crossing of the border by a half of that amount, or 14,000,000 tons counted once, in addition to the 9,000,000 tons interchanged across the border. If this explanation may be taken fairly to represent the situation, 23,000,000 tons of freight ebbed and flowed by rail between the interrelated railways of the United States and Canada in the off-year 1933, equal to nearly a third of the total volume of freight traffic handled in Canada in that period, a figure which in a pre-depression year may have been twice as great.

In this communion of service, made possible by coöperative through rates, friendly border practices, and cross-border structures of no mean order, the 43,000 miles of operated lines in Canada and 257,000 miles in the United States serve regions quite different in the character of their products. Those of Canada are more largely of a nature springing directly from the soil and those of the United States of a kind associated with industry. Curiously enough the volume of traffic per inhabitant so handled by rail in each of the two lands is almost exactly the same, thus indicating that in tempo the nations are alike. In their trade with each other the Canadian in the main exchanges his forest products, fish, and non-ferrous metals for the southern fruits and vegetables, cotton, manufactured goods, and coal of the American.

When it comes to investment in their railways the two countries have followed differing policies, although the costs per mile are almost identical. The Canadian, in his desire to bind his provinces together in a political sense, foster competition, and build up his industries, has provided his country with twice as much mileage as the American for doing the same amount of work. His net capital investment of nearly \$3,400,000,000 is to be compared with \$18,800,000,000 on the other side of the border. With one twelfth the population and volume of traffic, he possesses one sixth of the railway mileage and almost one sixth of the capitalization of the railways across the line. In fixing his average rates at a level approximating that of the



United States—1 cent a ton-mile and  $2\frac{1}{4}$  cents a passenger-mile—he is called upon to bear deficits amounting, in 1933, to nearly a hundred million dollars for the additional expense of maintaining and operating the excess mileage and the interest on its indebtedness.

Vitally affecting the interrelations of the railways of the two countries, and in fact entering into practically every phase of their development side by side for eighty years, has been the rate structure governing the cross-border movement of freight and passengers. Through its agency there could be a meeting of minds. Until it was perfected in some degree, disastrous rate wars were the rule, which had their outcome in the adoption of port and domestic differential rates affording the less favorably located routes a fair share of the traffic, as in the case of the circuitous Canadian lines serving their St. Lawrence and Maritime ports, New England, and the Port of New York. Abuses of numerous kinds led to the adoption of nationwide public regulation in the United States in 1887 and in the Dominion in 1903. Then came the opening of the Panama Canal in 1914, which resulted in the drastic lowering of coast-to-coast water rates and the placing of the interior of the continent at a disadvantage from which its population as a whole and its railways on both sides of the border have grievously suffered. Adding to the perplexities of the rate situation is the granting of government aid to the Canadian railways in respect of both subsidies and tax exemption, which has put a further substantial share of the cost of service on the backs of the general public in order that the rates borne by the shipper and traveler may not be so high as to stifle internal trade and trade with the United States. Moreover, the ownership and operation of over a half of the Canadian mileage by the Dominion Government has had its outcome in the fixing of statutory rates in which the element of economic reasonableness has played no part. This has had repercussions in the United States where shippers in many instances, especially the farmers of the West, have demanded similar consideration at the expense of the railway investor who under the law in that country is entitled, at least in theory, to compensatory rates. Further to complicate the situation is the projected seaway in the St. Lawrence River and chain of Great Lakes which, if constructed, will enable the ocean carrier to penetrate along the border to the crossroads of the continent and, in bringing renewed life to

the region of the interior so injuriously affected by the Panama Canal, cause alarm to the railways of the East thus threatened, as they believe, with a further loss of traffic.<sup>1</sup>

Another feature looming large on the railway horizon is the continuing effort in each country to become independent of the products of the other. In Canada the rates in many instances have been arbitrarily lowered by government edict for the encouragement of home industry, as, for instance, the mining of coal in the Far East and Far West for consumption in the middle provinces now supplied from near-by American sources. The adoption of a similar policy in the United States has been prevented or checked by the inhibition there of statutory rates, but through research and invention the attempt is being made to find substitutes for the forest products now imported in enormous quantities from Canada. Both moves are detrimental to international trade, and therefore to the welfare of the interrelated railways of the two countries. Along with these influences, so adverse to an untrammelled exchange of goods by rail across the border, is the erection of tariff barriers by the United States and, in retaliation, the taking of similar action by Canada in conjunction with the granting of preferential duties to imperial trade. Differences in currency rates of exchange, too, have had a baneful effect on the volume of cross-border rail traffic.

In viewing the material benefits that have arisen from the railway interrelations of which so much has been said, not the least of which is the competition in service and rates so aptly termed the life of trade, sight must not be lost of the part in this that has been played by the human element. Brains and brawn, too, have crossed and recrossed the frontier in the development of the interrelated railway systems. Officers and men of the rank and file, in both countries, belong to the same technical, fraternal, and trade associations, thus instilling among them feelings of friendship, imbuing them with the same attitudes toward their joint problems, and educating them in ways and practices so essential to the free interchange of equipment

1. There are those, like the Author, who consider this alarm to be groundless, if proper weight is given to the balanced prosperity that is expected, in the long run, to follow the removal of the handicap from which the interior of the continent is now suffering—a result which will be as beneficial to the railroads as to the countries they serve.

and the safe and efficient operation of trains from one country to the other. Evidence of this comity is to be found in the latter-day exchange of such outstanding railway geniuses as Canadian-born James J. Hill, Samuel R. Callaway, and Percy R. Todd for the American-born William C. Van Horne, Thomas Shaughnessy, and Charles M. Hays. If we go farther back such names as John A. Poor and Charles Paine shine forth on the American side of the line and Joseph Howe and Alexander T. Galt on the Canadian side, as marking men who first forged friendly bonds of steel between the two nations.

Other elements, too, have contributed to the closeness of relations between these countries. A common language and habits of thought, the same decimal currency with its ready adaptability to the making of tariffs and billing, identical bases in the preparation of timetables, uniformity of accounting practices varying only in respect of charges for depreciation, the ready exchange of ideas for the advancement of the art of transportation—all these make for happy relations in the railway field.

Summing up, the United States and Canada in their interrelated systems of railway are singularly alike in their physical make-up and their manning and methods of procedure, as they are in the nature of the problems that face them. Harmonious adjustment to the new conditions of the day involving widened competition on land and water and in the air is not the least of such problems, which include also wise reconciliation to changing trade relations between the two countries and the consolidation of railways of varying characteristics into regional systems. With their solution must be found a way to secure an ample supply of new capital on *sound terms* for the making good of obsolescence and for the retention, expansion, and improvement of all railways, *weak and strong alike*, where needed in the public interest. There are but two sources of such capital, the Government and the private investor. In the light of past and present circumstances, the private investor as the provider of such new capital may be dismissed as no longer in the field, especially in risk-taking equities—common stocks—so essential to the financial health of railways in private hands. This, of course, is on the assumption that individuals, insurance companies, savings banks, educational institutions, and others who have invested their money in the funded



debt of the railway as a quasi-public enterprise, on the implied promise of a fair return, will not be unjustly frozen out in order that new money may be attracted at the expense of the old.

Logic then points relentlessly to the Government in each country as the only source of capital under the conditions named, and in consequence the ultimate owner of its railways. This being so, it remains that through properly safeguarded coöperative private or public operation, or through the device of the "public authority" so successfully employed in recent years, means in this shall be found to avoid the dread evils of bureaucracies and self-seeking politics. Difficult though it be, it is a problem that can and must be solved in such a way that the public-at-large in each country will justly bear the burden of their own imposing, and reap the rewards to flow from a unified national system of transportation.

Knowing what is ahead of us, affecting as it will the interrelated railway systems of both countries, the way for the change should be prepared in time rather than to wait until face to face with disaster. If for no other reason this should be promptly done in the interest of national defense. Idealism here must enter for the common good where selfishness has failed.

Meantime it would seem wise—nay compelling—to revive consideration of the treaty proposed by the chairmen of the Interstate Commerce Commission and the Board of Railway Commissioners for Canada, and transmitted by the Secretary of State of the United States to the Canadian Government in 1911, so amended as to provide not only for the establishment of an International Commerce Commission for the regulation of railway matters, but also those dealing with other kinds of transportation on land, water, and in the air of like interest to the people of both nations. Along with this should go a statesmanlike attitude toward the necessary redressing of the patent injuries to their welfare, resulting from the building of the Panama Canal, which important elements in the interior states and provinces, taken in their entirety, consider may be cured by the deepening of the Mississippi River channel now under way southerly to the Gulf of Mexico, by the further development of their northern rail outlet to Hudson Bay, by the increasing use of their westerly routes to the Pacific coast and thence to the Orient and via the Panama Canal to Europe, and by the opening of the Great

Lakes—St. Lawrence Waterway for deep-draft vessels easterly to the sea.

In the doing of these things, tending as they will toward the balancing of rival forces of enormous magnitude, whatever is best for the continent in the broadest possible sense will be best for the railway interrelations of Canada and the United States, and, therefore, best for the vital interests thus closely held in common by the citizens of the two countries. In this lies an influence for peace than which there is none more powerful.

## APPENDIX A

### BIBLIOGRAPHY

- ALLEN, W. F. Short history of standard time (1904).
- AMBLER, CHARLES H. A history of transportation in the Ohio valley (1932).
- AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. The annals (September, 1936).
- BIGGAR, E. B. The Canadian railway problem (1917).
- BLADEN, M. L. Construction of railways in Canada to the year 1885. In: University of Toronto Studies—History and Economics. Contributions to Canadian Economics, vol. V (1932).
- Construction of railways in Canada, Part II, from 1885–1931. In: University of Toronto Studies—History and Economics. Contributions to Canadian Economics, vol. VII (1934).
- BOGART, ERNEST LUDLOW. Economic history of the American people (1930).
- BOND, BEVERLEY W., JR. The civilization of the old northwest, 1788–1812 (1934). Review by Randolph C. Downes in *American Historical Review*, October, 1934.
- BOSTON RAILROAD JUBILEE. An account of the celebration commemorative of the opening of railroad communication between Boston and Canada. September 17, 18, and 19, 1851 (1852).
- BREBNER, JOHN BARTLET. The explorers of North America, 1492–1806 (1933).
- CANADA. Bureau of Statistics. Transportation Division. Statistics of steam railways of Canada, 1933.
- Bureau of Statistics. Index numbers of railway freight rates, 1936.
- Royal Commission on Railways and Transportation in Canada. Report on railways and transportation in Canada, 1931–32.
- CANADA YEAR BOOK, 1933, 1934–35.
- CANADIAN POLITICAL SCIENCE ASSOCIATION. Proceedings (1932).
- CANADIAN RAILWAY AND MARINE WORLD. Railway gates between Canada and the United States (July, 1918).
- CARTER, CHARLES FREDERICK. When railroads were new (1909).
- CATHOLIC ENCYCLOPEDIA.



- CHAMPLAIN & ST. LAWRENCE RAILROAD. Report of directors (1851).
- CHASE, EDWARD E. Maine railroads (1926).
- CHILD, HAMILTON. Gazetteer and Business Directory of Windsor County, Vt., for 1883-84.
- COMAN, KATHARINE. Industrial history of the United States (1905).
- CONFERENCE on Canadian-American affairs, held at the St. Lawrence University, Canton, N.Y., June 17-22, 1935. Ed. by Walter W. McLaren, Albert B. Corey, and Reginald G. Trotter (1936).
- CONNECTICUT & PASSUMPSIC RIVERS RAILROAD. Agreement with connecting roads for its extension to Canadian line (1853).
- COWIE, FREDERICK WILLIAM. Transportation routes in Canada. Montreal Branch, The Engineering Institute of Canada (1923).
- CRICHER, A. LANE, *and* GREGG, E. S. Great Lakes-to-ocean waterways. In: Domestic Commerce Series no. 4, Department of Commerce, Bureau of Foreign and Domestic Commerce (1927).
- CULLOM, SHELBY M. Report on transportation interests of the United States and Canada (1889). Accompanying Senate Resolutions of August 3 and December 13, 1888, 51st Congress, 1st Session, Senate Report no. 847.
- DAFOE, JOHN W. Canada, an American nation (1935).
- DAISH, JOHN B. The Atlantic port differentials (1918).
- DELAWARE & HUDSON Co. A century of progress: history of Delaware and Hudson Company, 1823-1923 (1925).
- DICTIONARY OF AMERICAN BIOGRAPHY.
- DUNBAR, SEYMOUR. A history of travel in America (1915).
- DURHAM, THE EARL OF. Report (1839).
- EDGAR, MAJ. J. H., *and* THOMPSON, NORMAN. Canadian railway development (1933).
- ENCYCLOPAEDIA BRITANNICA.
- ENGINEERING NEWS. The Victoria jubilee bridge at Montreal—Grand Trunk Railway (August 26, 1897).
- ENGINEERING RECORD. New Canada—New England railroad link completed (May 1, 1915).
- FAY, SPOFFORD, *and* THORNDIKE. Great Lakes commerce and the port of Oswego, N.Y. (1925).
- "FIRST international railway, the." Life and writings of John Alfred Poor. Ed. by Laura Elizabeth Poor (1892).
- FLEMING, SANDFORD. On uniform standard time, for railways, telegraphs

- and civil purposes generally. In: American Society of Civil Engineers. Transactions, vol. X (December, 1881).
- FLINT, HENRY M. The railroads of the United States (1868).
- FOURNIER, LESLIE T. Railway nationalization in Canada (1935).
- FURMAN, FRANKLIN DERONDE. "The activities of the Stevens family that led to national and state government contracts," *Stevens Indicator*, May, 1935.
- GIBBON, JOHN MURRAY. Steel of empire (1935).
- GOODRICH and WILEY. The northern traveller and northern tour (1834).
- GREGG, E. S., and CRICHER, A. LANE. Great Lakes-to-ocean waterways. In: Domestic Commerce Series no. 4, Department of Commerce, Bureau of Foreign and Domestic Commerce (1927).
- HALE, H. E. Charts of passenger miles and ton miles in the United States (1934).
- HAMMATT, THEODORE D. Marketing Canadian wheat (1924). In: Trade Information Bulletin no. 251, United States Department of Commerce, Food Stuffs Division.
- HARTSOUGH, MILDRED L. From canoe to steel barge on the Upper Mississippi (1934).
- The Twin Cities as a metropolitan market (1925).
- HEDGES, JAMES B. Henry Villard and the railways of the Northwest (1930).
- HISTORY of the state of New York. Ed. by Alexander C. Flick. Vol. V (1934).
- HOOVER, HERBERT. St. Lawrence waterway project. Message from Calvin Coolidge, President of the United States, to Congress, transmitting a report of Herbert Hoover upon the development of shipway from the Great Lakes to the sea, dated December 27, 1926. 69th Congress, 2d Session, Senate Document no. 183.
- HULBERT, ARCHER B. Historic highways of America (1902-1905).
- HUNGERFORD, EDWARD. The modern railroad (1911).
- The story of the Baltimore & Ohio Railroad, 1827-1927 (1928).
- The story of the Rome, Watertown & Ogdensburgh R.R. (1922).
- INNIS, HAROLD A. A history of the Canadian Pacific Railway (1923).
- JACKMAN, W. T. Economics of transportation (1926).
- The St. Lawrence waterway project. In: Canadian Political Science Association Proceedings (1932).

- KEEFER, THOMAS C. The Canadian Pacific Railway. In: American Society of Civil Engineers. Transactions, vol. XIX (August, 1888).
- KINGSFORD, WILLIAM. The Canadian canals (1865).
- LARSON, LAURENCE M. "The Norwegian element in the Northwest," *Am. Historical Review*, October, 1934.
- LEAVITT, CHARLES T. "Influence of transportation changes in the development of the live stock industry of the Middle West to 1860," *Agricultural History*, January, 1934.
- LEGGE, CHARLES. A glance at the Victoria Bridge and the man who built it (1860).
- LOVETT, H. A. Canada and the Grand Trunk, 1829-1924 (1924).
- MC COLLESTER, PARKER, and CLARK, FRANK J. Federal motor carrier regulation (1935).
- MCCORMICK, CYRUS. The century of the reaper (1931).
- MACGIBBON, D. A. Railway rates and the Canadian Railway Commission (1917).
- MCLEAN, S. J. National highways overland. In: Canada and its provinces, vol. X (1914).
- Some phases of early Canadian railway development. In: Canadian Political Science Association Proceedings (1932).
- MCPHERSON, LOGAN G. Railroad freight rates in relation to the industry and commerce of the United States (1909).
- MARSHALL, HERBERT, SOUTHARD, FRANK A., JR., and TAYLOR, KENNETH W. Canadian-American industry (1936).
- MARTIN, CHESTER. Lord Selkirk's work in Canada. In: Oxford Historical and Literary Studies, vol. 7 (1916).
- MERK, FREDERICK. "British government propaganda and the Oregon treaty," *Am. Historical Review*, October, 1934.
- MEYER, BALTHASAR HENRY, and MACGILL, CAROLINE E. History of transportation in the United States before 1860 (1917).
- MOODY'S steam railroads, 1933.
- MORTON, A. C. Report on the St. Lawrence and Atlantic Rail-Road (1849).
- MOTT, EDWARD HAROLD. Between the ocean and the Lakes. The story of Erie (1901).
- NELSON'S ENCYCLOPAEDIA.
- NEW ENGLAND RAILROAD COMMITTEE. Report to the governors of the New England states (1931).



- NIMMO, JOSEPH. Reciprocity of transportation facilities between the United States and Dominion of Canada; and the Canadian Pacific Railway (1884). Reprinted from Annual report of internal commerce of the U.S. (1883).
- Statement in regard to the Canadian Government and the Canadian Pacific Railway. Submitted to the Senate Committee on Interstate Commerce (1890).
- *and* VAN HORNE, WILLIAM C. Correspondence in respect of Canadian Pacific aggressions upon American commerce (1889).
- OFFICIAL guide of the railways and steam navigation lines of the United States, Porto Rico, Canada, Mexico and Cuba (July, 1935).
- PARKIN, GEORGE R. The great dominion, Studies of Canada (1895).
- PAULLIN, CHARLES O. Atlas of the historical geography of the United States (1932). Particular reference is made to the publications listed under "Railroads in Operation, December, 1850, and Overland Mail Routes, 1850-59," on p. 134.
- PAXSON, FREDERICK L. The last American frontier (1910).
- PENNINGTON, MYLES. Railways and otherways (1896).
- POOR, HENRY V. History of the railroads and canals of the United States of America, vol. I (1860).
- Influence of the railroads of the United States in the creation of its commerce and wealth (1869).
- POOR, JOHN A. The railway. Remarks at Belfast, Maine, July 4, 1867.
- POPE, SIR JOSEPH. Memoirs of The Right Honourable Sir John Alexander Macdonald (1930).
- PORTLAND, MAINE, RAILWAY CONVENTION. Plan for shortening the time of passage between New York and London (1850).
- PRATT, JULIUS W. "Fur trade strategy and the American left flank in the War of 1812," *Am. Historical Review*, January, 1935.
- PYLE, JOSEPH GILPIN. The life of James J. Hill (1917).
- QUINCY, JOSIAH, JR. Letter to the shareholders of the Vermont Central Railroad, March, 1852.
- RAILWAY AND ENGINEERING REVIEW. Reconstruction of the Victoria tubular bridge, October 1, 1898.
- RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY. Bulletin no. 23, Outline of the history of the Grand Trunk Railway (November, 1930).
- Bulletin no. 39, Champlain & St. Lawrence Railroad (March, 1936).

- RAILWAY problems. Ed. by William Z. Ripley (1907).
- RAILWAY statistics of the United States, 1930. Compiled by Slason Thompson.
- RAYMOND, A. C. The relations between American and Canadian railways (1889).
- RICHARDS, ALFRED B., *and* WILSON, F. A. Britain redeemed and Canada preserved (1850).
- RIEGEL, ROBERT E. The story of the western railroads (1926).
- RINGWALT, J. L. Development of transportation systems in the United States (1888).
- RIPLEY, WILLIAM Z. Railroads—rates and regulation (1912).
- RITTER, ALFRED H. Transportation economics of the Great Lakes—St. Lawrence ship canal (1925).
- ROBERTS, CHARLES G. D. A history of Canada (1897).
- SABIN, EDWIN L. Building the Pacific Railway (1919).
- SCHOTTER, H. W. The growth and development of the Pennsylvania Railroad Company, 1846—1926 (1927).
- SEYMOUR, D. L. Report on reciprocal trade with the British American colonies (1853). Rendered to U.S. House Committee on Commerce, 32d Congress, 2d Session, Report no. 4 House of Representatives.
- SKELTON, OSCAR D. The railway builders (1916).
- SMALLEY, EUGENE V. History of the Northern Pacific Railroad (1883).
- SMITH, ARTHUR D. HOWDEN. Commodore Vanderbilt. An epic of American achievement (1927).
- SMITH, GOLDWIN. Canada and the Canadian question (1891).
- SMITH, J. HARRY. The Canadian Pacific, 1885—1935 (1936).
- STANDARD STATISTICS Co., Inc. Railway economic review, 1935 (1936).
- STEELE, J. DUTTON. Early history of railways and origin of gauge. In: American Society of Civil Engineers. Transactions, vol. II (1873).
- STEPHENS, GEORGE WASHINGTON. The St. Lawrence waterway project (1929).
- STEVENS, FRANK WALKER. The beginnings of the New York Central Railroad (1926).
- TALBOT, FRED A. Cassell's railways of the world (1924).
- TANNER, H. S. Description of the canals and railroads of the United States (1840).
- New universal atlas of the world (1846).
- TANSILL, CHARLES C. The Canadian reciprocity treaty of 1854. In:

- Johns Hopkins University Studies in Historical and Political Science, Series XL, no. 2 (1922).
- TAYLOR, W. D. Pioneer railway development in the United States. In: American Society of Civil Engineers. Transactions, vol. LXXIV (1911).
- THOMPSON, NORMAN, and EDGAR, MAJ. J. H. Canadian Railway Development (1933).
- THOMSON, LESSLIE R. Canada-United States boundary (1935).
- Remarks in respect of: Hudson's Bay Railway, Hydro-electric developments v. Consumption of coal in Canada, and St. Lawrence ship canal depth (1935).
- Some economic aspects of water transportation. In: Conference on Canadian-American Affairs (1936). Paper read June 30, 1935.
- "The St. Lawrence problem," *Engineering Journal* (April, 1929). Paper read before Engineering Institute of Canada, February 14, 1929.
- TRANSCONTINENTAL LINES HEARING BEFORE BOARD OF ARBITRATION. Question of Canadian differentials (1898).
- TRANSPORTATION CONFERENCE, 1933-35. Government ownership and operation of railroads (1936).
- TROUT, J. M., and EDWARD. The railways of Canada, 1870-71.
- TUPPER, SIR CHARLES. Recollections of sixty years (1914).
- TURNER, FREDERICK JACKSON. The frontier in American history (1921).
- TYE, W. F. Canada's railway problem and its solution. In: Canadian Society of Civil Engineers. Paper 391, vol. 31, pt. 1, Jan.-June, 1917.
- UNITED STATES ENGINEER DEPARTMENT, Board of Engineers for Rivers and Harbors. Transportation on the Great Lakes (revised, 1930).
- UNITED STATES GOVERNMENT. Bureau of the Census. Abstract of the Fifteenth Census of the U.S., 1930 (1933).
- Bureau of the Census. A century of population growth from the first census of the United States to the twelfth, 1790-1900 (1909).
- Bureau of American Ethnology. Handbook of American Indians north of Mexico. Bulletin 30, Part II, Washington, Government Printing Office (1910).
- Statistical atlas of the United States (1914).
- UNITED STATES INTERSTATE COMMERCE COMMISSION. Sixth annual report (1892).



- Canadian Control of railroads in the U.S. Letter from Chairman, Interstate Commerce Commission, Senate Document no. 162, 66th Congress, 2d Session, 1919.
- Letter regarding non-action on Senator Cullom's Report no. 847 of 1889, Senate Document no. 133 of 1898, U.S. Tariff Commission's Report of 1921, Senate Documents no. 107 of 1928, no. 183 of 1928, nos. 212 and 219 of 1929 and S. J. Res. 67 of 1929; also non-action on proposed treaty between Canada and the United States regarding an international railway commission.
- Letter to U.S. Senate regarding joint traffic association (1898). 55th Congress, 2d Session, Senate Document no. 133.
- Letter to U.S. Senate regarding railroad rates on agricultural products (1928). 70th Congress, 2d Session, Senate Document no. 183.
- Letter to U.S. Senate regarding railway rates on grain (1928). 70th Congress, 1st Session, Senate Document no. 107.
- No. 23992 Michael Comella v. D.L. & W. R.R. Co. et al. (1934).
- Statistics of railways in the United States, 1915 to 1933.
- UNITED STATES INTERSTATE COMMERCE COMMISSION *and* SECRETARIES OF STATE AND AGRICULTURE. Report on diversion of commerce from United States ports to Canadian ports (1929). 70th Congress, 2d Session, Senate Document no. 212.
- Also supplemental to Document no. 212 entitled, "Transportation charges in the United States and Canada" (1929). 70th Congress, 2d Session, Senate Document no. 219.
- UNITED STATES SENATE. St. Lawrence waterway. Hearings before a Sub-Committee of the Committee on Foreign Relations, U.S. Senate, 72d Congress, 2d Session, on S. Res. 278 (1932-33).
- Hearing, Committee on Interstate Commerce. Adjustment of freight rates upon export grain, Parts 1 and 2, 70th Congress, 2d Session, S. J. Res. 67 (1929).
- Hearing, Committee on Interstate Commerce. In relation to the transportation of the United States and Canada (1891).
- Hearing, U.S. Senate Committee on Joint Rates on Traffic through Canada (1905). 59th Congress, 1st Session, Senate Documents, vols. 16-21.
- Testimony taken from the Select Committee on relations with Canada. Senate Reports, No. 1530, 51st Congress, 1st Session (1890).
- UNITED STATES TARIFF COMMISSION. Preferential transportation rates (1922).

- UNITED STATES TREASURY DEPARTMENT. Communication from the Secretary of the Treasury transmitting . . . report of Israel D. Andrews . . . on the trade and commerce of the British North American colonies, and upon the trade of the Great Lakes and rivers. S. Ex. Doc. 112, 32d Congress, 1st Session, Serial no. 622-623.
- VAN HORNE, WILLIAM C., *and* NIMMO, JOSEPH. Correspondence in respect of Canadian Pacific aggressions upon American commerce (1889).
- VAUGHAN, WALTER. The Life and Work of Sir William Van Horne (1920).
- VERMONT CENTRAL RAILROAD. Investigation (1873).
- VERMONT CONVENTION. Meeting at Windsor in behalf of a railroad through the valleys of the Connecticut and Passumpsic rivers to the St. Lawrence River (1836).
- WILEY *and* GOODRICH. The northern traveller and northern tour (1834).
- WILGUS, WILLIAM J. The Detroit River tunnel, between Detroit, Michigan, and Windsor, Canada (paper read before the Institution of Civil Engineers, London, 1911). The Detroit River tunnel (325-page typewritten volume of records, 1910, in Engineering Societies Library). The Van Buren bridge across the St. John River (file records, 1914-15, in Engineering Societies Library, New York City).
- WILLSON, BECKLES. The life of Lord Strathcona and Mount Royal (1915).
- WILSON, F. A., *and* RICHARDS, ALFRED B. Britain redeemed and Canada preserved (1850).
- WITKE, CARL. A history of Canada (1928).
- WOODCOCK, THOMAS S. Some account of a trip to the Falls of Niagara (1836).
- WORLD ALMANAC, 1935.
- WRIGHT, C. P. The St. Lawrence deep waterway: A Canadian appraisal (1936).
- ZIFFER, E. A. On the gauges of railroad track in general, with special consideration of narrow gauge railroads. In: American Society of Civil Engineers. Transactions, vol. XXIX (1893).

## APPENDIX B

### CONTRIBUTORS TO CORRESPONDENCE RESPECTING RAILWAY INTERRELATIONS OF THE UNITED STATES AND CANADA, 1935-36

INFORMATION of great value has been generously supplied to the Author from the sources named below. In view of the fact that only a fraction of the material contained in the correspondence in connection with the preparation of this study could be included in the text, the entire series has been deposited in the Library of Columbia University, where it will be available for all students of this subject. Pertinent excerpts from the volumes mentioned in the text are also included in this collection.

#### *Railways.*

Baltimore and Ohio Railroad

George M. Shriver, *Senior Vice President*

J. J. Ekin, *Comptroller*

Bangor and Aroostook Railroad

Percy R. Todd, *President*

Howard C. Baird, *Consulting Engineer*, on Van Buren Bridge super-structure

Canadian National Railways

S. J. Hungerford, *President*

Canadian Pacific Railway

Sir Edward W. Beatty, *Chairman and President*

E. A. Leslie, *Comptroller*

J. M. R. Fairbairn, *Chief Engineer*

Delaware & Hudson Railroad

J. T. Loree, *Vice President and General Manager*

Delaware, Lackawanna & Western Railroad

J. M. Davis, *President*

Erie Railroad

C. E. Denney, *President*

George H. Minor, *Vice President and Secretary*

Great Northern Railway

W. P. Kenney, *President*

Lehigh Valley Railroad

E. E. Loomis, *President*



## Maine Central Railroad

E. S. French, *President*W. J. Burns, *Secretary to the President*A. H. Morrill, *Assistant Chief Engineer*

## New York Central System

F. E. Williamson, *President*

## Northern Pacific Railway

Charles Donnelly, *President*

## Pennsylvania Railroad

M. W. Clement, *President*J. F. Deasy, *Vice President—Operation*

## Pere Marquette Railway

J. J. Bernet, *President*

## Rutland Railroad

P. E. Crowley, *President*George L. R. French, *Vice President and General Manager*

## Toronto, Hamilton &amp; Buffalo Railway

F. E. Williamson, *President*

## Wabash Railway

Frank C. Nicodemus, Jr., and Norman B. Pitcairn, *Receivers*A. K. Atkinson, *Treasurer for Receiver*S. E. Cotter, *Chief Operating Officer**Public Authorities*

## Board of Railway Commissioners for Canada

S. J. McLean, *Assistant Chief Commissioner*

## Dominion Bureau of Statistics

R. H. Coats, *Dominion Statistician*G. S. Wrong, *Chief, Transportation and Public Utilities Branch*

## International Boundary Commission

John A. Pounder, *Engineer to Commission*

## Interstate Commerce Commission

George B. McGinty, *Secretary*M. O. Lorenz, *Director of Statistics*

## International Joint Commission

Lawrence J. Burpee, *Secretary for Canada**Miscellaneous*Samuel McKee, Jr., *Professor, Department of History, Columbia University, New York (bonding privilege)*

John Loye, *President*, Canadian Railroad Historical Association  
(gauge, Champlain & St. Lawrence Railroad)

Lesslie R. Thomson, *Consulting Engineer*, Montreal, Quebec (Canadian  
hydroelectric developments v. American coal)

J. T. Johnston, *Director*, Dominion Water Power and Hydrometric  
Bureau of Dominion of Canada (maps)

F. C. C. Lynch, *Director*, Bureau of Economic Geology, Dominion of  
Canada (maps)

Frederick Stuart Greene, *Superintendent of Public Works*, State of  
New York (opening and closing dates of navigation)

Julius H. Parmelee, *Director*, Bureau of Railway Economics, Washing-  
ton, D.C. (railway statistics)

NOTE: For books and documents consulted in this connection see Appendix  
A, Bibliography.

## APPENDIX C\*

### PROPOSED TREATY BETWEEN THE UNITED STATES AND CANADA RESPECTING AN INTER- NATIONAL COMMERCE COMMISSION

*Transmitted by the Chairman of the Interstate Commerce Commission  
to the Secretary of State, December 30, 1910*

Drafted and submitted to the Government of Canada for consideration and approval early in the year 1911, in response to which the State Department was advised on December 30, 1911, and again in December, 1914, that the matter, while still in abeyance, was receiving attention. Since that time it is said that no further communication on the subject has been received by the Department of State from the Canadian Government and that the treaty is considered to be in abeyance.

December 30, 1910.

*The Honorable,  
The Secretary of State.*

SIR:

By your letter of appointment of July 12, 1910, I had the honor to be designated as the representative of the Government of the United States for the discussion with the representative of the Government of Canada of an arrangement for the joint control of international traffic rates between the United States and Canada through an international railway commission or otherwise; and by your letter of instructions of corresponding date I was advised that the Honorable J. P. Mabee, Chairman of the Railway Commission of Canada, had been appointed as the Canadian representative for the purpose of such discussion, and was instructed to arrange for meetings with Mr. Mabee at such place in either country and at such times as might be found mutually convenient. I was also instructed, upon the completion of the conferences with Mr. Mabee, to make a report thereof to the Secretary of State concerning the following matters which were deemed appropriate for consideration:

Whether existing legislation in both countries is adequate for the effective

\* From copy of original document furnished by the Secretary of the Interstate Commerce Commission, July 28, 1934.



control of through freight rates, and whether such control would be mutually advantageous to the business interests of both countries;

Whether it would be necessary to negotiate a treaty or, on the other hand, the result could be accomplished through concurrent legislation in both countries;

Whether under a treaty or such legislation joint control could be enforced through the separate administrative or judicial authorities in each country, respectively, or preferably by a new joint board in the nature of an International Railway Commission;

Whether the discussion should include not only through railway rates and through lake and rail rates combined, but also "port to port" rates on the Great Lakes between points in the United States and Canada.

Other similar related questions which will doubtless arise in the course of your conferences would properly be included in such discussion.

In compliance with these instructions I have the honor to report that several conferences with Mr. Mabee have been held from time to time at which the various aspects of the subject as outlined above have been carefully considered. It gives me great satisfaction to say that Mr. Mabee and myself are in complete accord upon the matters which have been under discussion and that he concurs in this report and the recommendations therein contained.

1. It is quite apparent that the existing laws of the United States and of Canada are inadequate for the effective control of international carriers, as respects through rates and the establishment of through routes and other matters which are proper subjects of joint regulation, and that such regulation would be mutually advantageous to the interests of both countries. It is equally plain that the regulation to which international carriers should be subjected is substantially similar to that provided for interstate carriers of the United States under the substantive provisions of the amended act to regulate commerce, as the same are defined and summarized in a draft of a proposed treaty between the United States and Canada which is annexed hereto and made a part of this report. The intended effect of such a treaty would be to subject international carriers, within the limits outlined, to obligations and requirements corresponding to those now imposed upon the interstate carriers of this country.

2. To accomplish the desired result a treaty between the two countries would be preferable to concurrent legislation, and a draft of the substantial provisions of a proposed treaty, omitting the formal parts, is appended hereto and submitted for your consideration.

3. As will be seen this proposed treaty provides for a tribunal to enforce and administer its provisions, to be known as the International

Commerce Commission, and which shall consist of four members, namely, the Chairman of the Interstate Commerce Commission and the Chief Commissioner of the Board of Railway Commissioners for Canada, for the time being, a member of the Interstate Commerce Commission to be appointed by the President of the United States, and a member of the Board of Railway Commissioners for Canada to be appointed by the Governor General of Canada in council. The powers conferred upon and authority given to this Commission in respect of international carriers would correspond, to the extent indicated, to those exercised by the Interstate Commerce Commission in respect of interstate carriers within the United States.

4. International carriers by water between the United States and Canada should not be subjected to the provisions of such a treaty, except when and to the extent that they unite with rail carriers in either country in forming through water and rail or rail and water routes.

5. The provisions of such a treaty should apply to telegraph, telephone and express companies, and such companies should be subject as respects their international business to the authority of the International Commerce Commission.

All of which is respectfully submitted.

(Signed) MARTIN A. KNAPP

*Chairman, Interstate Commerce Commission*

As the representative of the Government of Canada in the conference with Mr. Knapp, and under authority so to do in my letters of appointment, I concur in the foregoing report and the recommendations therein contained.

(Signed) J. P. MABEE

*Chief Commissioner,  
Board of Railway Commissioners for Canada*

## PROPOSED TREATY

### INTERNATIONAL COMMERCE COMMISSION

#### *Preliminary Article.*

For the purposes of this treaty all common carriers, including express companies, engaged in the transportation of passengers or property wholly by railroad (or partly by railroad and partly by water when both are used under a common control, management or arrangement for

a continuous carriage or shipment), destined to any point in Canada, (a) originating at any point in the United States, (b) originating at any point outside of Canada and passing through the United States: or destined to any point in the United States, (a) originating at any point in Canada, (b) originating at any point outside of the United States and passing through Canada, shall be deemed international carriers and shall be subject to the provisions hereinafter contained; and for the same purposes telegraph, telephone and cable companies, whether wire or wireless, engaged in sending messages from or through points in the United States to or through points in Canada or from or through points in Canada to or through points in the United States, and companies having authority to construct, maintain or operate any international bridge, tunnel, or ferry, for railway purposes, and to charge tolls therefor, shall be deemed international carriers and shall be subject to the provisions of this treaty.

### *Article 1.*

The High Contracting Parties agree that the term "transportation" shall include cars and other vehicles and all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, express or implied, for the use thereof, and all services in connection with the receipt, delivery, elevation and transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported, and it shall be the duty of every carrier subject to the provisions of this treaty to provide and furnish such transportation upon reasonable request therefor, and to establish through routes and just and reasonable rates applicable thereto, and to provide reasonable facilities for operating such through routes, and to make reasonable rules and regulations with respect to the exchange, interchange and return of cars used therein, and for the operation of such through routes and providing for reasonable compensation to those entitled thereto.

All charges made for any service rendered or to be rendered in the transportation of passengers or property, or for the transmission of messages by telegraph, telephone or cable, or in connection therewith, and all charges or tolls for the use of any international bridge, tunnel, or ferry used for railway purposes, shall be just and reasonable, and every unjust and unreasonable charge for such service or any part thereof is prohibited and declared to be unlawful; provided however that messages by telegraph, telephone or cable, subject to the provisions of this treaty, may be classified as the Commission hereinafter



established may permit, and different rates may be charged for the different classes of messages.

*Article 2.*

The High Contracting Parties agree that it shall be the duty of every carrier subject to the provisions of this treaty to establish, observe and enforce just and reasonable classifications of property for transportation, with reference to which rates, tariffs, regulations or practices are or may be made or prescribed, and just and reasonable regulations and practices affecting classifications, rates or tariffs, the issuance, form and substance of tickets, receipts and bills of lading, the manner and method of presenting, marking, packing and delivering property for transportation, the facilities for transportation, the carrying of personal, sample and excess baggage, and all other matters relating to or connected with the receiving, handling, storing and delivery of property, subject to the provisions of this treaty, which may be necessary or proper to secure the safe and prompt receipt, handling, transportation and delivery of such property upon just and reasonable terms, and every unreasonable classification, regulation or practice with reference to the commerce falling within the provisions of this treaty is prohibited and declared to be unlawful.

*Article 3.*

The High Contracting Parties agree that if any carrier subject to the provisions of this treaty shall directly or indirectly by any special rate, rebate, drawback, or other device, charge, demand, collect or receive, from any person or persons, a greater or less compensation for any service rendered or to be rendered as such carrier, than it charges, demands, collects, or receives from any other person or persons, for doing for him or them a like and contemporaneous service, under substantially similar circumstances and conditions, such carrier shall be deemed guilty of unjust discrimination, which is declared to be unlawful, and is hereby prohibited; and no such carrier shall make or give any undue or unreasonable preference or advantage to any particular person, company, firm, corporation or locality, or any particular description of traffic, or service, in any respect whatsoever, or subject any particular person, company, firm, corporation, or locality, or any particular description of traffic, or service, to any undue or unreasonable prejudice or disadvantage, in any respect whatsoever, but on the contrary every such carrier, according to its respective powers, shall afford all reason-

able, proper, and equal facilities for the interchange of traffic or messages between their respective lines, and for the receiving, forwarding and delivering of passengers, property or messages to and from their several lines and those connecting therewith, and shall not discriminate in their rates and charges between such connecting lines.

*Article 4.*

The High Contracting Parties agree that every carrier subject to the provisions of this treaty shall file with the Commission hereinafter created, and print and keep open to public inspection schedules showing all the rates, fares and charges for transportation between different points on its own route and points on the route of any other connecting line, or by water, when a through route and joint rate have been established, and if no joint rate over the through route has been established the several carriers in such through route shall file, print and keep open to public inspection as aforesaid, the severally established rates, fares and charges applied to the through transportation. The schedules printed as aforesaid shall plainly state the places between which property and passengers will be carried, and shall contain the classification of freight in force, and shall also state separately all terminal charges, storage charges, icing charges, and all other charges which the Commission may require and direct. All privileges or facilities granted or allowed, and any rules or regulations which in any wise change, affect or determine any part of the aggregate of such aforesaid rates, fares and charges, or the value of the service rendered to the passenger, shipper or consignee, and all such schedules shall be printed and filed in all respects in accordance with the rules, regulations and directions established by the Commission.

*Article 5.*

The High Contracting Parties agree that no carrier subject to the provisions of this treaty shall engage or participate in the transportation of passengers or property unless the rates, fares and charges upon which the same are transported have been filed and published in accordance with the provisions of this treaty and of the rules and regulations and directions of the Commission, nor shall any carrier charge or demand or collect or receive a greater or less or different compensation for such transportation of passengers or property, or for any service in connection therewith, between the points named in such tariffs, than the rates, fares, and charges which are specified in the tariffs filed and

in effect at the time, nor shall any such carrier refund or remit in any manner or by any device any portion of the rates, fares and charges so specified, nor extend to any shipper or person any privileges or facilities in the transportation of passengers or property, except such as are specified in such tariffs.

*Article 6.*

The High Contracting Parties agree that it shall be unlawful for any carrier subject to the provisions of this treaty to enter into any combination, contract, or agreement, express or implied, to prevent by change of time schedule, carriage in different cars, or by any other means or device, the carriage of freight from being continuous from the place of shipment to the place of destination, and no break of bulk, stoppage or interruption made by such carrier shall prevent the carriage of freight from being and being treated as one continuous carriage from the place of shipment to the place of destination, unless such break of bulk, stoppage or interruption is made in good faith or for some necessary purpose, and without any intent to avoid or unnecessarily interrupt such continuous carriage, or to evade any of the provisions of this treaty.

*Article 7.*

The High Contracting Parties agree that in order to enforce as against such carriers the various provisions of this treaty an International Commission is hereby established, to be known as the International Commerce Commission of the United States and Canada, which shall consist of four members, namely, the Chairman of the Interstate Commerce Commission of the United States and the Chief Commissioner of the Board of Railway Commissioners for Canada for the time being, a member of the Interstate Commerce Commission to be appointed by the President of the United States, and a member of the Board of Railway Commissioners for Canada to be appointed by the Governor General of Canada in Council, which Commission shall possess the powers and exercise the authority conferred upon it and embodied in this treaty.

*Article 8.*

The High Contracting Parties agree that it shall be the duty of the Commission, and it is hereby empowered, to execute and enforce the provisions of this treaty and to require obedience to the same by the carriers subject thereto.



*Article 9.*

The High Contracting Parties agree that any person, body politic, or organization, complaining of anything done or omitted to be done by any carrier subject to the provisions of this treaty, in contravention of the provisions thereof, may complain to the Commission pursuant to the rules, regulations and practice to be by it established, and the Commission is hereby empowered to investigate and determine such complaints and make appropriate orders in respect thereto, and may exercise such powers and authority in any proceeding instituted on its own motion the same as though complaint had been made.

*Article 10.*

The High Contracting Parties agree that the Commission may either upon complaint or upon its own initiative without complaint establish through routes and joint classifications, and may establish joint rates as the maximum to be charged, and may prescribe the division of such rates and the terms and conditions under which such through routes shall be operated, whenever the carriers themselves have refused or neglected or are unable by disagreement or otherwise to voluntarily establish such through routes or joint classifications or joint rates, and this provision shall apply when one of the connecting carriers is a water line.

*Article 11.*

The High Contracting Parties agree that the Commission may make all necessary and proper rules, directions and regulations, for the guidance of interested persons, the fixing of times and places for its meetings, and generally for the purpose of carrying out the provisions of this treaty, which said rules, directions and regulations shall be binding upon and enforceable against all carriers subject to its provisions.

*Article 12.*

The High Contracting Parties agree that if necessary for the enforcement of orders made by the Commission the same may be made orders of the Interstate Commerce Commission of the United States or the Board of Railway Commissioners for Canada respectively, or both, and enforced as such.

*Article 13.*

The High Contracting Parties agree that as against any order of the Commission the Canadian carrier affected thereby shall have the

same right of appeal or other remedy as is now provided by the laws of Canada relating to orders of the Board of Railway Commissioners of Canada, and similarly the United States carrier shall have the same remedy or right of review as is possessed by such carrier against the orders of the Interstate Commerce Commission.

*Article 14.*

The High Contracting Parties agree that the Commission may employ such assistants from time to time as it may deem advisable, and that any salaries and personal expenses payable to the members of the Commission shall be paid by their respective governments, and all reasonable and necessary joint expenses incurred by the Commission shall be paid in equal moieties by the High Contracting Parties, or otherwise as the Commission may certify.

*Article 15.*

The High Contracting Parties agree that this treaty shall remain in force for three years, dating from the day of exchange of ratifications, and thereafter until terminated by twelve months written notice by either High Contracting Party to the other.

## APPENDIX D

### BORDER RESTRICTIONS

CUSTOMS regulations, immigration inspection, and other restrictions imposed by law affect the interchange of traffic between the United States and Canada in respect of (a) freight in bond, (b) freight not in bond, (c) passengers and their baggage, (d) mail, (e) express, and (f) train equipment, crews, fuel, and supplies moving across the border to and from near-by terminals or to and from more distant terminals at the end of the train runs. As illustrative of their general nature the following extract is given from data on the subject furnished by the Canadian railways.\*

#### FREIGHT

##### FREIGHT IN BOND

##### *From Canada to the United States.*

Shipments from Canada destined to points in the United States where it will be convenient for the goods to be cleared through Customs after arrival at destination must be accompanied by an Export Entry, on the form provided for this purpose by the Canadian Customs authorities. This document is a statement of the quantity, nature, and value of the goods comprised in the shipment. It is made in duplicate, one copy being delivered by the railway company to the Canadian Collector of Customs at the port of exit, and the other being attached to the waybill forwarded with the goods. In addition, in the case of shipments exceeding \$100 in value—with exceptions covering forest products, fertilizers, crude minerals, live domestic animals, newsreel films, fish, and household goods and personal effects, when these goods are free of duty, or pay duty on a specific and not ad valorem basis—a consular invoice certified by a United States consular office must also be attached to the waybill. There are 42 United States consular offices in the Dominion. The consular fee for certifying invoices is \$1, for American goods returned to the United States, and \$2.50 for all other invoices. Consular invoices must be prepared in quadruplicate for shipments made in bond to ports of delivery in the United States.

\* Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.



In all cases where a consular invoice is not required, a shipper's invoice must be attached in place of it, giving the same information as already has been given on the export entry. A car report and manifest in quadruplicate must also be attached, and a duplicate bill of lading.

In addition all shipments entering the United States must comply with the Marking Act and with the regulations of the United States Departments of Health and of Agriculture. Many important interior cities of the United States are designated as ports of delivery, and goods destined to these centers and to their neighborhood may be shipped through in bond in this way. In all cases goods entering the United States in bond must be in cars or packages sealed by the United States Customs at the frontier.

*From the United States to Canada.*

Shipments from the United States destined to points in Canada where it will be convenient for the goods to be cleared through Customs after arrival at destination must be accompanied by a shipper's export declaration of the United States Customs. No consular certificate is required by the Canadian Customs, nor are car manifests required—an extra copy of the waybill being the equivalent. Practically every important commercial center in Canada is designated as a port of entry and goods can be shipped in bond from the United States to all such points. In all cases goods entering Canada in bond must be in cars or packages sealed by the Canadian Customs at the frontier.

FREIGHT NOT IN BOND

*From Canada to the United States.*

Shipments not in bond—i.e., shipments on which duty is to be paid at the frontier—must be accompanied by the same papers as in the case of freight in bond, except that the consular invoice is in triplicate, but these documents will be handed by the carrier to the consignees' agent or Customs broker at the port of entry, who will make entry of the shipment with the Customs officials and pay the duty, if any. From this point the shipment of these goods will be identical with the shipment of other goods moving from point to point in the United States.

*From the United States to Canada.*

Owing to the large number of interior ports of entry in Canada there is no distinction in the entry of goods from the United States to Canada, whether this be made at the border or at an interior point.

When duty is paid at the frontier it is unnecessary for cars or packages to be sealed.

NOTE: The only possible criticism which could be made of the present system in the case of freight movement between the two countries is that the preparation of several documents giving precisely the same information might be avoided and one document used to meet all purposes—the necessary number of copies being provided. The Canadian system of a large number of interior ports of entry is extremely convenient to shippers but involves considerable expense to the Government and to carriers who must provide bonded storage for L. C. L. freight at each port of entry.

### PASSENGERS AND BAGGAGE

Passengers traveling in either direction across the frontier are interviewed by Immigration officers of the country to which they are destined and examined to ascertain whether they are of the classes permitted to enter. Baggage is inspected, and duty collected on anything purchased abroad which is not subject to exemption. In order to prevent unnecessary delay at frontier points, both the United States and Canada permit the Customs and Immigration officers of the other country to interview passengers and examine baggage on trains before reaching the frontier. In addition baggage may in both cases be forwarded in bond to any destination where Customs examination is possible, and examined after arrival.

### MAIL

All mail is subject to Customs examination and payment of duty. Mail is forwarded to bonded destination in Canada where consignee is notified by the Collector of Customs to call for it and pay duty. In the United States duties are assessed by Customs, and parcels sent to consignees with duty charges C.O.D. All mail shipments require a Customs declaration to be attached by shippers. The requirements for making entry are the same as in the case of freight shipments in bond.

First Class Mail is sorted under the supervision of a Customs officer, and passed by him without examination when it appears to contain manuscript only.

### EXPRESS

The procedure for express is the same as for freight.

## TRAIN EQUIPMENT, CREWS, FUEL, AND SUPPLIES

The regulations of both Canada and the United States allow *locomotives* of the railways of the other country to bring their trains to the end of their run and return.

*Railway cars* are permitted to enter either country laden to destination and may then be loaded for return or intermediate points. They may also enter either country empty for the purpose of obtaining loads for return to their own country.

Both countries have a provision for the free entry of locomotives, cars, and coaches and repair equipment brought in temporarily for the purpose of clearing obstructions, fighting fires, or making emergency repairs.

*Repairs* made to equipment of railways of either Canada or the United States in the other country are subject to duty.

*Crews* may work to the end of their run and return.

*Fuel* may be carried sufficient for the run of the locomotive and return.

*Dining-car supplies* purchased in either country are subject to duty when sold in the other country. Where supplies are not required they may be sealed at the border by Customs in lockers of the car for the time that the car is in foreign territory. There is no difference in the procedure whether to near-by terminals or to distant ones.

Supplies of all kinds purchased in either country are subject to duty upon return of the car across the frontier.



## APPENDIX E

### INTERRELATED RAILWAY RATES

THE following comments made by the Canadian railways in 1935 on existing freight and passenger rates are of interest because of their bearing on the liquidity of traffic movements by rail between the two countries.\*

#### FREIGHT RATES

##### *Differential rates.*

Early in the history of the development of the Canadian railways with their subsidiaries and connections in New England, it became apparent that the manufacturers of New England could not maintain their business in western United States markets without some modification of the rate structure, as against plants which had sprung up in the central portions and Middle West of the United States, nor could the Canadian railways obtain a fair share of the New England traffic to the West without some inducement to the New England manufacturers to ship over the Canadian routes which were more circuitous and, therefore, took more time in transit than via the direct so-called "standard" routes of the United States lines. Thus a community of interest was formed between New England manufacturers and Canadian railways which resulted in the establishment of differential rates from all of New England (including New York City, via the steamer lines on Long Island Sound), to points Detroit south and west thereof in the central and western United States. These differentials were also made applicable over lake and rail routes operating through Depot Harbor and Windsor, Ontario, in connection with steamer lines owned or used by the Canadian railways. These differentials are now a matter of agreement between the Canadian and United States lines; they also serve as a preventive against disastrous rate wars caused by one line or lines trying to obtain traffic in competition with other lines.

Reasonable differentials help to make a fair distribution of available traffic between various lines and routes, and an interesting statement of the justification of these differentials is that given by the Interstate Commerce Commission in Part 2 of a 40-year review of changes in freight rates, prepared by the Auditor of the Commission, which was

\* Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36.

published at Washington in 1903. At page 43 of this publication the standard and differential routes are dealt with in the following language:

An important element in the arrangement of rate schedules is the distinction made in the class of railroads or routes, by which certain routes are under agreement allowed to charge lower rates than others to the same points of destination. This is another feature of the "differential plan," and has within recent years been extensively applied in the territory now under consideration. From each of the eastern cities there are two classes of roads, which are commonly termed the "standard lines" and the "differential lines." The standard lines are those which are conceded to possess advantages over their competitors by reason of shorter all-rail distance, and superior facilities arising from old and well-established connections and freight organizations. The differential lines are those which, on account of the longer routes and inadequate facilities, or owing to their through routes being partly by water, or from other disadvantages, can not command, at even rates with more direct lines, an amount of tonnage which under customary methods for determining such matters would be considered a fair proportion. With a view to equalizing these conditions and securing the permanency of the tariffs, as well as to bring about a fair distribution of the traffic, "differential lines" are accorded somewhat lower rates than the "standard lines."

Reference to the desirability of these differential freight rates has been commented upon by the Interstate Commerce Commission in the decision in Finance Docket No. 7821, Central Vermont Railway reorganization, 158 I.C.C. 397:

For many years the old company's properties have been operated in conjunction with the lines of the Canadian National Railways and the Grand Trunk Western System, and the acquisition of the properties by the new company will continue the operation thereof as part of a system as heretofore and enable the new company to continue uniform and economical service. The railway to be acquired affords transportation to more than 50% of the population of Vermont, and it is claimed the proposed acquisition will maintain the differential in freight rates that has been in effect for many years between the New England States and the Middle Western States, and is of considerable benefit to New England shippers.

One feature of the differential rates which should be given consideration is that they are not excessively low, compared with the rates via the standard routes; for example, the differential rate from Boston to Chicago and St. Louis via the all-rail route averages only 3 per cent less than via the standard rate, and to Detroit 4 per cent; from New York the differential rate via the ocean-and-rail route through New London, thence via routes through Canada, averages only 5 per cent be-

low the all-rail standard rate to Chicago and St. Louis, and 7 per cent to Detroit.

*Rates from various Atlantic and St. Lawrence ports.*

It is presumed that this part of the inquiry relates to import traffic and as to this it has been the policy of the Canadian lines for many years, jointly with their United States connections, to maintain from Portland, Maine, Saint John, New Brunswick, West Saint John, New Brunswick, Halifax, Nova Scotia, and the St. Lawrence ports, the same rates on import traffic into the Middle Western states as are applicable from Baltimore, Maryland, thus providing additional routes for import traffic at the same rates as the minimum from any United States port, Baltimore rates being the lowest.

*Panama Canal situation.*

The opening of the Panama Canal created many problems for the Canadian and United States carriers with respect to water competition between the Atlantic and Pacific coasts and it has been the policy of the Canadian and United States carriers to join together and meet this competition so far as possible by publishing transcontinental rates that would retain for their mutual interests such traffic as they could.

*Rail and water rates.*

The Canadian railways operate joint rail and water rates applicable:

- (a) between Canada and the Central Western states, via Windsor, Ontario, Great Lakes Transit Corporation, Duluth, Minnesota, Milwaukee, Wisconsin, or Chicago, Illinois, and thence United States lines; and via Depot Harbor, Ontario, Canada Atlantic Transit Co., Milwaukee or Chicago, and thence United States lines; also
- (b) between points in New England, including New York State, and the Central Western states via the same routes.

These routes give shippers the benefit of the lower cost of water transportation to the extent that they are used as part of a through rail and lake route.

*Long-and-short-haul problem.*

There are several phases of this problem, which fall into the following categories:

- (1) Rates and routes between points in Canada and points in the United States; such rates are subject to the strict requirements of



the Fourth Section of the Interstate Commerce Act, which prohibits lower rates being applied to or from more distant points in the United States than to or from intermediate points except under permission of the Interstate Commerce Commission on a showing of the circumstances attaching to such rates which make Fourth Section Relief necessary. Such conditions, of course, may be caused by water or truck competition, which may exist at the origin or destination points, but not at the intermediate points. The rates so far as the haul within Canada is concerned may be made competitive under Section 314 of the Canadian Railway Act without making any formal application to the Board of Railway Commissioners for Canada.

- (2) Overhead traffic passing between points in the United States through Canada; such rates may be made competitive under the Canadian Railway Act and not applicable to or from intermediate points in Canada, owing to the fact that circumstances and conditions which cause the publication of certain rates between points in the United States may be altogether different in Canada.
- (3) Traffic between points in Canada passing through the United States; there are no long-and-short-haul difficulties in connection with such traffic as it is not necessary to file such tariffs with the Interstate Commerce Commission.

### PASSENGER RATES

The basic passenger rate per mile in eastern United States throughout the period covered by this survey was 3.6 cents, in western United States 3 cents, and in Canada 3.45 cents.

All international passenger fares are predicated on combinations of local fares to and from the border.

The question as to whether these fares are affecting the volume of cross-border movements is open to same difference of opinion as in the case of the 3.6 cents locally in eastern United States, 3 cents in western United States, and 3.45 cents in Canada. Numerous experiments in reduced fares have been made in both countries in an effort to arrive at a uniform conclusion as to whether or not such reductions stimulate traffic, and would warrant a general reduction in the basic rates.

The Canadian lines—while maintaining the 3.45 cents per mile locally in Canada—have established through International fares on combinations over border points, using Canadian local fares based on 3.45 cents per mile to the border and fares based on 3.6 cents or 3 cents per mile from the border, as tendered by the United States lines.

During the experimental period in the United States the Canadian

lines have accepted the reduced tenders of the United States lines in establishing through international fares, though the Canadian factor used in construction has not been reduced to the same extent as the factor south of the border.

All through fares to, from, or through the United States and Canada are made on combinations of basic rate per mile which governs locally in each section, equalization of fares via competitive routes being taken into consideration, and no factor in the fare combination exceeds the basic rate authorized in the district through which the traffic moves.

The long-and-short haul provision in the interstate law is very seldom used and could not consistently be used generally in either country nor on international passenger traffic.

### GENERAL

The utmost coöperation exists between the Canadian railways and United States roads on both sides of the border. Traffic is interchanged freely by means of through cars, through routes, and through rates, and all information required in connection with the movement of cars is exchanged by all concerned. That the services performed by the lines leased or otherwise controlled by the Canadian railways in the United States have been in the public interest is evidenced by the following statement made by Commissioner (now Federal Coördinator) Eastman, quoted from the Interstate Commerce Commission reports on the Consolidation of Railroads:

It seems to me clear that insofar as lines in New England are now controlled by Canadian systems nothing should be done to interfere with that control. Intimate and friendly relations with Canada are of much importance to Northern New England and these Canadian systems also supply an element of competition.

Competition of service exists between the Canadian railways and United States roads in certain areas of both countries. This has been in the interests of the people living in these areas as it has provided alternative routes for shippers and has also tended to bring the railroads closer together to their own benefit. The relations between the railroads of the two countries have been most cordial for many years and there is nothing in the nature of the competition to cause any interruption in the past pleasant relations.

## APPENDIX F

### CROSS-BORDER HINDRANCES DUE TO THE TARIFF AND CURRENCY EXCHANGE SITUATION

IN respect of physical connections, operating methods, equipment, border practices, and freight and passenger rates, there is little or nothing to interfere with the free interchange of railway traffic between the United States and Canada; but the same cannot be said about two extraneous matters which do act as hindrances in this regard—the tariff and fluctuations in the rate of currency exchange. Queries on these points have brought forth, in 1935, several illuminating responses from railway executives from which extracts are given below.

#### *New York Central Lines.*

“With regard to the tariff question: This opens up a broad problem on which many volumes have been written. No doubt high tariff barriers affect freight movements of merchandise and consequently reduce tonnage hauled by the rail carriers across the frontiers. On the other hand, it is held by some authorities that high tariffs in protecting home industries stimulate the consumption of domestic products with a net increase in merchandise moved. During 1920 the exchange rate against Canadian currency ranged from 12% to 16%. Again in 1931 the exchange rate against Canadian currency ranged from 15% to 18%. This was in effect a raising of the tariffs, and resulted in a very marked reduction in passenger travel of Canadian people into the United States, either as tourists or on business. With tourists, it practically stopped purchasing in the United States as the rate of exchange, together with the Customs tariff on reentering Canada, made it prohibitive.

“In 1926, 65% of the imports into Canada came from the United States, and 37% of Canada’s exports went into the United States. In 1930, the Smoot-Hawley Bill became effective, placing duties on certain commodities entering the United States prior to which had been on the free list. This reduced the exports of Canada’s farm products from approximately \$174,000,000 annually to less than \$4,000,000 in 1931. Following this, Canadian Customs tariffs from the United States were very materially increased, followed later by the so-called Ottawa agreements, resulting in tariff protection in the United Kingdom and throughout the British Empire, in favor of Canada, and preference in favor of



United Kingdom and British Empire countries on goods entering Canada. The result of the Ottawa agreements increased the percentage of imports from the British Empire from 19% in 1929 to 31% in 1934, and exports from Canada to the British Empire from 33% in 1929 to 51% in 1934, these facts indicating the effect of tariffs on international trade, which in turn affects the volume of rail traffic across the border points."

*Pennsylvania Railroad.*

"The principal tariff situation from the Pennsylvania Railroad standpoint, as well as the producers in the United States, is the Canadian duty of 75 cents per net ton plus 3% advalorem on bituminous coal, which was assessed principally for the purpose of encouraging the use of Canadian and Nova Scotia coal. The application of this duty, together with subvention granted the Dominion operators on Canadian rail coal, has had the effect of increasing the use of Canadian and Nova Scotia coal, as well as Welsh and British coals."

*Northern Pacific Railway.*

"There is no doubt that the existing tariff situation between the two countries does greatly restrict the movement of traffic. For example, Canadian grain came into the United States very freely until the duty was raised to the present high level of 40¢ a bushel. Cattle also came in freely before the duty was raised to 3¢ per pound. Many cattle came in for beef and a large number for feeders went to farmers in Minnesota and Iowa. They are coming in quite freely at present even at this high duty because of the shortage caused by the drought and the reduction of the supply, for economical reasons, but of course this cannot continue under normal conditions.

"The movement of fresh fruits and fresh vegetables from the United States into western Canada is also restricted by the high values and duty arbitrarily applied by the Commissioner of Customs for Canada during the period that they may be raised in Canada.

"Formerly Canadian wheat could come into the United States for milling and the flour go out for export but there are no longer any bonded mills or elevators to handle wheat or flour of this kind. Canada does have large exports of both wheat and flour, and it would offer additional traffic to the United States roads if a plan could be worked out so that they could handle it.

"Another tariff situation that works against the United States roads grows out of the application of the British preferential tariff. For ex-

ample, shipments coming into Seattle for Canadian destinations will be subject to a higher duty than if they landed at Vancouver whereas silk coming in from the Orient for the United States can move over Canadian railroads to eastern border points like Ogdensburg as freely as via the United States roads from Seattle. This latter of course hardly has any bearing on the volume of traffic between the United States and Canada."

*Tariff concessions under reciprocity compact.*

Since the remarks above quoted were penned the United States and Canada, on November 15, 1935, entered into a reciprocal trade agreement of vast importance. Under its terms exports at reduced tariff rates from one country to the other, save to the extent that those from the United States to Canada are still somewhat affected by the system of British Empire preference, will enjoy the advantage which naturally goes from the proximity of the markets of the two countries to each other, and the similarity of their consumption of goods and economic life in general as heretofore has been pointed out.<sup>1</sup> This new treaty, in helping producers on both sides of the border to win back at least a substantial part of their lost trade, cannot otherwise than promote the well-being of the railways alike of the United States and Canada, closely interrelated as they are through the agency of joint rates and the service they render to the public regardless of national lines.

*References*

Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; an article and an editorial in the *New York Times* of November 18, 1935, in respect of "Tariff Concessions under Reciprocity Compact."

1. See pp. 181, 229, 231, *supra*.

# APPENDIX G

## CROSS-BORDER HOLDINGS OF AMERICAN AND CANADIAN RAILWAYS

1933

### *Holdings of American railways in the Dominion of Canada:*

*Cross-border mileage in Canada*  
*Owned or leased* *Operated*

#### *Bangor & Aroostook Railroad*

Van Buren Bridge Co.—Border near Van Buren, Me., to junction with C.N. Rys. at St. Leonard, N.B.

0.28

0.28

#### *Delaware & Hudson Railroad*

Napierville Junction Ry.—Border near Rouses Point, N.Y., to Delson Junction, Que., and thence via C.P. Ry. to Montreal

27.15

41.74

#### *Great Northern Railway*

Brandon, Saskatchewan & Hudson's Bay Ry.—Border near Haskett, Man., to Morden, Man., 15.22 miles; and border near Bannerman, Man., to Brandon, Man., 69.50 miles

84.72

84.72

Crow's Nest Southern Ry.—Border near Gateway, Mont., to Fernie, B.C.

33.75

53.32

Midland Ry. of Manitoba (50 per cent)—Border near Emerson Junction to Winnipeg, Man.

6.40

75.74\*

Nelson & Fort Sheppard Ry.—Border near Waneta, B.C., to Nelson, B.C.

54.84

60.87

Vancouver, Victoria & Eastern Ry. & Navigation Co.—Border near Laurier, Wash., to border near Danville, Wash.; border near Curlew, Wash., to border near Molson, Wash.; border near Similkameen, B.C., to Princeton, B.C.; and border near Blaine, Wash., to Vancouver, B.C.

149.18

150.48

Northern Pacific & British Columbia Ry.—Terminals in Vancouver, B.C. (half interest)

..

..

#### *Maine Central Railroad*

St. Croix Junction to Princeton, Me.—Portion in New Brunswick

5.10

5.10

#### *New York Central System*

Canada Southern Ry. (controlled by M.C. R.R. owning 55 per cent of the stock)—Windsor, Ont., to Niagara frontier

379.29

381.15

\* Of this the 1.72-mile connection between Emerson Junction and the border near West Lynn is operated exclusively by the Great Northern Railway and is, therefore, excluded from the Northern Pacific Railway mileage jointly operated by the two companies.



*Holdings of American railways in the  
Dominion of Canada:*

*Cross-border mileage in Canada*  
*Owned or leased*      *Operated*

Detroit River Tunnel Co. (controlled by M.C. R.R.)—Border in Detroit River to Windsor, Ont.	1.45	1.45
Ottawa & New York Ry.—Border near Cornwall, Ont., to Ottawa, Ont.	56.82	58.77
St. Lawrence & Adirondack Ry.—Border near Huntingdon, Que., to Adirondack Junction, Que., and thence via C.P. Ry. to Montreal	46.57	60.69
Canadian Pacific Car & Passenger Transfer Co., Ltd. (part interest)—Car-ferry crossing of St. Lawrence River between Ogdensburg and Prescott, Ont.	..	..

*Northern Pacific Railway*

Manitoba Railway—354.65 miles in Manitoba leased to province for 999 years and subleased to C.N. Rys.	..	..
Midland Ry. of Manitoba (50 per cent)—Border near Emerson Junction to Winnipeg, Man.	6.40	74.02
Northern Pacific & British Columbia Ry.—Terminals in Vancouver, B.C. (half interest)	..	..

*Pennsylvania Railroad*

International Bridge Co. and connecting line (C.N. Rys.) Trackage—Border near Black Rock, Buffalo, N.Y., to Fort Erie, Ont.	..	2.50
Pennsylvania-Ontario Transportation Co. (50 per cent)—Connection by car ferry between Ashtabula, Ohio, and Port Burwell, Ont.	..	..

*Pere Marquette Railway*

Lake Erie & Detroit River Ry., including trackage over Canada Southern Ry.—Windsor, Ont., to Niagara Frontier†	198.63	336.69
--	--------	--------

*Wabash Railway*

Canadian National Rys. Trackage—Border near Windsor, Ont., to Niagara frontier	..	245.40
--	----	--------

*Toronto, Hamilton & Buffalo Railway*

Owned jointly (73 per cent of the stock owned by New York Central interests and 27 per cent by Canadian Pacific Ry.)—Between Waterford and Welland via Hamilton, Ont., the operated mileage totaling 111.03	..	..
---	----	----

*Baltimore & Ohio Railroad*

Ontario Car Ferry Co. (50 per cent)—Connection between Charlotte (Genesee Dock), N.Y., and Cobourg, Ont.	..	..
--	----	----

† Of recent years the use of the line from Welland Junction to Fort Erie, Ontario, has been discontinued, leaving the route to Niagara Falls, Ontario, as the active one in 1935.

## RAILWAY INTERRELATIONS

*Holdings of American railways in the  
Dominion of Canada:*

<i>Cross-border mileage in Canada</i>	
<i>Owned or leased</i>	<i>Operated</i>

*Algoma Central & Hudson Bay Railway*

323.75 miles controlled by United States interests,  
but not a cross-border line

..	..
----	----

*Essex Terminal Railway*

21.44 miles owned by United States interests, but  
not a cross-border line

..	..
----	----

*Eastern British Columbia Railway*

13.04 miles owned by United States interests, but  
not a cross-border line

..	..
----	----

*Morrissey, Fernie & Michel Railway*

5.37 miles owned by United States interests, but not  
a cross-border line

..	..
----	----

*Massawippi Valley Railway*

31.00 miles between the border near Beebe Junction and Lennoxville, Que., and 4 miles of trackage rights over the Grand Trunk into Sherbrooke, Que., leased by the Connecticut & Passumpsic Rivers R.R. embraced in the Boston & Maine system and operated under a long-time sublease by the Canadian Pacific Ry. (Q.C. Ry.)

NOTE: The 1933 figures are as of December 31 in that year in Canada.

*Holdings of Canadian railways in the  
United States:*

<i>Cross-border mileage in U.S.</i>	
<i>Owned or leased (Round figures)</i>	<i>Operated (Round figures)</i>

*Canadian National Railways*

Atlantic & St. Lawrence R.R., St. Lawrence & Atlantic R.R. and Branches—Border near Norton Mills, Vt., to Portland, Me.

172	172
-----	-----

Canadian National Rys. in N.Y.—At Suspension Bridge, N.Y.

..	..
----	----

Central Vermont Ry. and Subsidiaries—Rouses Point, N.Y., and border near Highgate Springs, Vt., to New London, Conn.

371	432
-----	-----

Champlain & St. Lawrence R.R.—Border near Rouses Point to Rouses Point, N.Y.

1	1
---	---

Duluth, Winnipeg & Pacific Ry., including Duluth, Rainy Lake & Winnipeg Ry.—Border near Ranier, Minn., to Superior, Wis.

169	177
-----	-----

Grand Trunk Western R.R. and Subsidiaries—Border in St. Clair and Detroit rivers to Chicago, Ill., and Milwaukee, Wis.

966	1,006
-----	-------

International Bridge Co.—Border in Niagara River to Black Rock, Buffalo, N.Y.

1	1
---	---

Maine Central R.R.—Trackage at Vanceboro, Me.

..	..
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*Holdings of Canadian railways in the  
United States:*

*Cross-border mileage in U.S.*

<i>Owned or leased (Round figures)</i>	<i>Operated (Round figures)</i>
--	-------------------------------------

Minnesota & Manitoba R.R.—Border near Warroad, Minn., to border near Baudette, Minn.	44	44
St. Clair Tunnel Co.—Border in St. Clair River to Port Huron, Mich.	1	1
United States & Canada R.R.—Border near Fort Covington, N.Y., to Massena, N.Y.	22	22
Vermont & Province Line R.R.—Border near Alburgh to connection with C.V. Ry. near East Alburgh, Vt.	3	3
Detroit Terminal R.R. Co. (50 per cent)	..	..
Detroit & Toledo Shore Line R.R. (50 per cent)—Detroit, Mich., to Toledo, Ohio	..	..
Toledo Terminal R.R. (minority interest)—Belt Ry. in Toledo, Ohio	..	..
Chicago & Western Indiana R.R. (20 per cent)—Entrance to Chicago	..	..
The Belt Ry. of Chicago (1/12)—Belt Ry. at Chicago	..	..
Canada Atlantic Transit Co. of U.S.—Steamship line Depot Harbor, Ont., to Milwaukee, Wis., and Chicago, Ill.	..	..
Central Vermont Transportation Co.—Steamship connection between New London, Conn., and New York	..	..
Ontario Car Ferry (50 per cent)—Connection between Cobourg, Ont., and Charlotte, N.Y.	..	..

*Canadian Pacific Railway*

Aroostook River R.R.—Border near Fort Fairfield, Me., to Presque Isle, Me.	29	29
Aroostook Valley R.R.—Extension of A.R.R.R. from Washburn Junction to Caribou Village and Sweden, Me. (electric railway)	32	32
Connecticut & Passumpsic Rivers R.R. (Boston & Maine system)—Newport, Vt., to Wells River, Vt.	..	64
Border near Beebe Junction, Que., to Newport, Vt. (Quebec Central Ry.)	..	5
Duluth, South Shore & Atlantic Ry. (51 per cent)	..	563
Houlton Branch R.R.—Border near Houlton to Houlton, Me.	3	3
International Ry. Co. of Maine, including trackage over Maine Central R.R.—Border near Lowelltown to border near Vanceboro, Me.	145	201
Midland R.R. of Vermont—Border near Mansonville, Que., to North Troy, Vt.	1	1
Minneapolis, St. Paul & Sault Ste. Marie Ry. (51 per cent)—Border near Portal, N.D., and Noyes, Minn., to border at Sault Ste Marie and to connection with Wisconsin Central Ry. at the Twin Cities, Minn.	..	4,320*

\* Includes Wisconsin Central Railway.



## RAILWAY INTERRELATIONS

*Holdings of Canadian railways in the  
United States:*

	<i>Cross-border mileage in U.S.</i>	
	<i>Owned or leased (Round figures)</i>	<i>Operated (Round figures)</i>
Mineral Range Ry. including Hancock & Calumet Ry.	..	48
Newport and Richford R.R.—Border near Richford, Vt., to border near Missisquoi, Vt.	6	6
Border near Highwater, Que., to Newport, Vt.	15	15
Spokane International Ry. including Coeur d'Alene & Pond d'Oreille (93 per cent)	164	164
Wisconsin Central Ry. and Subsidiaries—Connection with Minneapolis, St. Paul & Sault Ste. Marie Ry. at the Twin Cities to Milwaukee, Wis., and Chicago, Ill.	..	..†
Lake Superior Terminal & Transfer Ry. Co. of Wisconsin	..	..
Saint Marie Union Depot Co.	..	..
Sault Ste. Marie Bridge Co.	..	..
St. Paul Union Depot Co. (part interest)	..	..
Minnesota Transfer Ry. (part interest)	..	..
Canadian Pacific Car & Passenger Transfer Co., Ltd. (part interest)—Car-ferry crossing of St. Lawrence River between Ogdensburg and Prescott, Ont.	..	..
Pennsylvania-Ontario Transportation Co., Ltd. (50 per cent)—Car-ferry crossing of Lake Erie between Ashtabula, Ohio, and Port Burwell, Ont.	..	..
Canadian Pacific-British Columbia Coast Steamship Services—Operate between Vancouver, B.C., and Seattle, Wash., et al.	..	..

NOTE: The 1933 figures are the averages for that year in the United States.

*References*

*Statistics of Railways in the U.S., 1933* (Interstate Commerce Commission); *Statistics of Steam Railways of Canada, 1933*; Correspondence respecting Railway Interrelations of the United States and Canada, 1935-36; Dominion Bureau of Statistics, Internal Trade Branch, December 31, 1932; *Canadian-American Industry* (1936), by Marshall, Southard and Taylor.

† Included in Minneapolis, St. Paul & Sault Ste. Marie Railway.

## APPENDIX H

### EFFECT OF MOTOR COMPETITION ON RAILROAD RATES

(From *Federal Motor Carrier Regulation* by Parker McCollester and Frank J. Clark [Traffic Publishing Co., 1935], pp. 24-27.)

THE active competition of the motor vehicle and the efforts of the railroads to meet that competition are having a profound effect upon the railroad rate structure of the country and upon the basic theories of rate making which have heretofore prevailed.

In their efforts to meet motor truck competition, the railroads have made drastic reductions in their freight rates. Thus the railroads not only suffer revenue losses due to the diversion of traffic to the motor trucks but also, by these rate reductions, their revenues are reduced on the traffic which they continue to transport. Moreover, reductions in rates to meet competition do not always prove effective for the reason that the trucks in turn reduce their rates. And rates reduced to meet truck competition are often used as factors in making combination rates which are lower than through rates, thereby causing the rail lines additional loss of revenue on non-competitive traffic. Lastly, the publication by the railroads of truck competitive rates inevitably, even though erroneously, invites shippers to use these reduced rates as measures for demanding similar rates on non-competitive traffic.

The effect of motor competition upon the railroad freight rate structure is apparent not only in these rate reductions but in the threat which they present to established ideas of railroad rate making.

Railroad freight rates have not been predicated entirely or even largely on the cost of the service performed. The element of the value of the commodity has been an important factor in railroad rate making and plays a large part in the classification of articles in the various railroad classifications. The result of this is that the higher valued commodities pay relatively higher rates than the lower valued commodities, although the cost of transporting the former may be no more or even less than the cost of transporting the latter. The basis for this theory of rate making was succinctly stated by the Commission in *Classification of Canned Goods*, 98 I. C. C. 166, 173:

If in the establishment of rates or classifications, differences in value of the respective commodities carried were reflected in rate increments only sufficient to cover the cost of insurance, one of two results would of necessity

follow. The rates as a whole would be such that it would be impossible for the carriers to earn what they reasonably might, and in fact what they necessarily should in order to perform their services; or the rates on many low grade commodities would have to be such that they would be prohibitory of any movement.

Commercial motor truck transportation has done much to disrupt this theory of rate making. Truck operators, particularly the contract carriers, base their rates principally upon the cost of the service performed. The element of value apparently bears upon trucking rates generally only to the extent necessary to reflect the additional insurance required for the higher valued commodity. It is true in many cases, particularly in respect of common carrier truck transportation, that rates vary from competitive rail rates only in amounts sufficient to enable truck operators to secure the traffic. Such rates because they are made in relation to the rail rates may reflect the element of value to the same extent as do the rail rates. This, however, does not indicate a conscious effort on the part of truck operators to give consideration to the factor of value, but rather an endeavor to secure traffic at the most remunerative rates possible. Moreover, the efforts of truck operators to relate their rates closely to rail rates have not, as a general proposition, been successful, due to the severe competitive struggle within the industry and the willingness of most operators to accept traffic for return loads at excessively low rates. As a consequence, the cost of the service performed is the controlling basis for trucking rates, if they can be said to reflect any underlying theory.

The tendency of motor rates to reflect primarily the element of transportation costs and to disregard differences in values of commodities transported presents a serious problem for the railroad rate structure, because it is the higher valued commodities which have previously borne a relatively larger proportion of the total transportation costs which are the commodities most susceptible to truck competition. For the railroads to continue to maintain rates on this traffic at what has previously been considered a reasonable and normal level is to suffer the loss of the traffic. A revision of rates on a cost of service basis would, on the other hand, prohibit the movement of many low grade commodities and cause a further diversion to truck transportation. No doubt the total transportation costs might to some extent be redistributed by increases in the long haul rates which have heretofore been generally on a relatively lower basis per mile than short haul rates. Such an attempt might well cause the long haul rates to exceed the previously accepted bounds of reasonableness. Whether the commission would hold that these old



standards of reasonableness must yield to the claim that such rates are now reasonable because necessary in order to enable the rail carriers to earn a reasonable return upon their investment is at least doubtful.

In order to meet truck competition, many railroads have published tariffs under which shippers are permitted to ship mixed carloads of different commodities, the carload rate being assessed for each commodity in lieu of the less-carload rate or of charges assessed for the entire shipment on the basis of the rate for the highest rated commodity.

The effect of motor vehicle competition upon the revenues of the railroads from passenger traffic has been similar to its effect upon their freight revenues. Not only have the railroads suffered losses in income from having a smaller number of passengers to transport, but drastic reductions have been made in railroad passenger rates in an effort to recover traffic lost to the motor vehicle and for the purpose of preventing further loss of traffic. There is no doubt that in some sections reduced rates have resulted in a substantial increase in railroad passenger traffic, but whether the revenues of the railroads have been increased thereby is another question as to which there are widely differing views. The passenger fare structure is, however, far less complicated than the railroad freight rate system and the disruptive effects of motor vehicle competition are more simple and direct.

# APPENDIX I

## BORDER GATEWAYS

(MARCH 1, 1935)

<i>In United States</i>		<i>In Canada</i>		<i>Original date of opening</i>
<i>Name of station</i>	<i>Operating company</i>	<i>Name of station</i>	<i>Operating company</i>	
Calais (Milltown), Me.	Me.C. R.R.	St. Stephen, N.B.	C.P. Ry.	1896-97
St. Croix Jc., Me.	Me.C. R.R.	.....	Me.C. R.R. }	1856
Woodland, Me.	Me.C. R.R.	.....	Me.C. R.R. }	
Vanceboro, Me.	{ Me.C. R.R. C.P. Ry.	McAdam, N.B.	{ C.P. Ry. C.P. Ry.	1871
Houlton, Me.	C.P. Ry.	Debec, N.B.	C.P. Ry.	1889*
Ft. Fairfield, Me.	C.P. Ry.	Aroostook, N.B.	C.P. Ry.	1870-71
Van Buren, Me.	B. & A. R.R.	St. Leonard, N.B.	Van Buren Bridge Co. (B. & A. R.R.)	1876
Lowelltown, Me.	C.P. Ry.	Megantic, Que.	C.P. Ry.	1915
Norton Mills, Vt.	C.N. Rys.	Stanhope, Que.	C.N. Rys.	1889*
North Derby, Vt.	C.P. Ry.	Beebe Jc., Que.	C.P. Ry. (Q.C. Ry.)	1853
North Troy, Vt.	C.P. Ry.	Mansonville, Que.	C.P. Ry.	1870
North Troy, Vt.	C.P. Ry.	Highwater, Que.	C.P. Ry.	1911
East Richford, Vt.	C.P. Ry.	Highwater, Que.	C.P. Ry.	1872-73
Richford, Vt.	C.P. Ry.	Abercorn, Que.	C.P. Ry.	1872
Highgate Springs, Vt.	Central Vt. Ry. (C.N. Rys.)	St. Armand, Que.	Central Vt. Ry. (C.N. Rys.)	1871
East Alburgh, Vt.	C.N. Rys.	Noyan Jc., Que.	C.N. Rys.	1864
Rouses Point, N.Y.	{ C. & St.L. R.R. (C.N. Rys.)	Cantic, Que.	C.N. Rys.	1897
	{ Rutland Ry.	Cantic, Que.	C.N. Rys.	1851
	{ D. & H. R.R.	Originally at Can- tic, now at La- colle, Que.	Napierville Jc. Ry. (D. & H. R.R.)	1917
Malone, N.Y.	N.Y.C. Lines	Huntingdon, Que.	St.L. & A. Ry. (N.Y.C. Lines)	1875 & 1907
Rooseveltown, N.Y.	N.Y.C. Lines	Cornwall, Ont.	O. & N.Y. Ry. (N.Y.C. Lines)	1892
Fort Covington, N.Y.	U.S. & Canada R.R. (C.N. Rys.)	St. Agnes, Que.	C.N. Rys.	1900
Ogdensburg, N.Y.	N.Y.C. Lines	Prescott, Ont.	C.P. Ry.	1883
Charlotte, N.Y.	B. & O. R.R.	Cobourg, Ont.	C.N. Rys.	1861†
Niagara Falls (Suspension Bridge), N.Y.	{ N.Y.C. Lines (1855)‡ E. R.R. (1871)‡ L.V. R.R. (1896)‡	Niagara Falls, Ont.	{ C.N. Rys.‡ Wabash Ry.‡	1907
	{ N.Y.C. Lines§ Pere Marquette Ry.§		{ Canada So. Ry. (N.Y.C. Lines)§	1855
	{ N.Y.C. Lines D.L. & W. R.R. (1882)		{ Pere Marquette Ry.§	1898
	{ E. R.R. (1874) P. R.R.		{ C.N. Rys. Canada So. Ry. (N.Y.C. Lines)	1883
Buffalo (Black Rock), N.Y.		Fort Erie (Bridge- burg), Ont.	{ Wabash Ry. P. R.R. Pere Marquette Ry.	1903-4

\* Through service across the State of Maine.

†The original water connection, effected in 1851-54 between the Ogdensburg or Northern Railroad (now the Rutland Railroad) and the line from Prescott to Ottawa, has long since been discontinued.

‡ Canadian National Bridge.

§ New York Central Bridge.

<i>In United States</i>		<i>In Canada</i>		<i>Original date of opening</i>
<i>Name of station</i>	<i>Operating company</i>	<i>Name of station</i>	<i>Operating company</i>	
Ashtabula, Ohio	P. R.R.	Port Burwell, Ont.	C.P. Ry.	..
	{ N.Y.C. Lines (1854)		{ Canada So. Ry.	1873
			(N.Y.C. Lines)	
Detroit, Mich.	{ C.P. Ry.	Windsor, Ont.	{ C.P. Ry.	1890
	{ G.T.W. R.R.		{ C.N. Rys.	1854
	(C.N. Rys.)			
	Pere Marquette Ry.		Pere Marquette Ry.	1903-4
	Wabash Ry.		Wabash Ry.	1898
Port Huron, Mich.	G.T.W. R.R.	Sarnia, Ont.	C.N. Rys.	1858-59
	(C.N. Rys.)			
Chicago, Ill., and Milwaukee, Wis.	Various	Depot Harbor, Ont.	C.N. Rys.	1899
Sault Ste Marie, Mich.	M.St.P. & S.Ste.M. and D.S.S. & A. Rys.	Sault Ste Marie, Ont.	C.P. Ry.	1887-88
	(C.P. Ry.)			
Ranier, Minn.	D.W. & P. Ry.	Fort Frances, Ont.	C.N. Rys.	1907
	(C.N. Rys.)			
Baudette, Minn.	C.N. Rys. (Minn. & Man. R.R.)	Rainy River, Ont.	C.N. Rys. }	1901
Warroad, Minn.	C.N. Rys. (Minn. & Man. R.R.)	Hickey, Man.	C.N. Rys. }	
	{ M.St.P. & S.Ste.M. Ry.		{ C.P. Ry.	1880
	{ (C.P. Ry.) (1904)	Emerson, Man.	{ Midland Ry. Co. of	
	{ G.N. Ry. (1878)		Man. (G.N. Ry.)	1878
Pembina, N.D.	N.P. Ry.	Emerson Jc., Man.	Midland Ry. Co. of	
			Man. (N.P. Ry. and G.N. Ry.)	1888
Neché, N.D.	G.N. Ry.	Gretna, Man.	C.P. Ry.	1882
Walhalla, N.D.	G.N. Ry.	Haskett, Man.	B.S. & H.B. Ry.	
			(G.N. Ry.)	1907†
St. John, N.D.	G.N. Ry.	Bannerman, Man.	(Ditto)	1907†
Northgate, N.D.	G.N. Ry.	Northgate, Sask.	C.N. Rys.	1913
Portal, N.D.	M.St.P. & S.Ste.M. Ry. (C.P. Ry.)	North Portal, Sask.	C.P. Ry.	1893
Sweetgrass, Mont.	G.N. Ry.	Coutts, Alta.	C.P. Ry.	1890
Gateway, Mont.	G.N. Ry.	Newgate, B.C.	C.N. So. Ry.	
			(G.N. Ry.)	1903†
Eastport, Idaho	Spokane Int. Ry.	Kingsgate, B.C.	C.P. Ry.	1906 & 1911
	(C.P. Ry.)			
Boundary, Wash.	G.N. Ry.	Waneta, B.C.	N. & Ft.S. Ry.	
			(G.N. Ry.)	1895
Laurier, Wash.	G.N. Ry.	Grand Forks, B.C.	V.V. & E. Ry. & Nav. Co. (G.N. Ry.)	1903-4
			(Ditto)	
Danville, Wash.	G.N. Ry.	Grand Forks, B.C.	(Ditto)	1909-10
Chopaka, Wash.	G.N. Ry.	Similkameen, B.C.	(Ditto)	
Sumas, Wash.	N.P. Ry.	Huntingdon, B.C.	C.P. Ry.	1891
Blaine, Wash.	G.N. Ry.	White Rock, B.C.	V.V. & E. Ry. & Nav. Co. (G.N. Ry.)	1891

|| The Canada Atlantic Transit Company in this year was incorporated as a water link in the Canada-Atlantic route between the New England states (via Alburgh, Vt.) and the United States Middle West.

† Discontinued in 1936.



In this no attempt has been made to include independent steamship crossings of the border between rail termini at lake ports. Were this to be done the total number of border crossings thus shown would be considerably increased, as well as the showing of tonnages interchanged between the rail carriers of the two countries.

## APPENDIX J

### THE OWNERSHIP PROBLEM

IN this study an attempt is made to set forth as briefly as possible the reasons why, in the opinion of the Author, logic points to the ultimate ownership of the railways of Canada and the United States by their respective Governments.

#### *Axioms.*

1. Railways, necessary in the public interest, must be continued in service and improved and expanded as occasion requires, regardless of their earning power. Consolidation of the strong and weak, therefore, is necessary in order that some regions may not unduly prosper while others languish through inadequate or broken-down means of communication.
2. Needed new capital for the retention, improvement, and expansion of railways can come from one or the other of two sources—the public or the private purse.
3. New capital from private sources for such purposes is only available when there is a reasonable prospect of a fair return.
4. Sound financing of such new capital under private ownership, in the absence of government guaranties, calls for a capital structure in which an amply proportioned cushion of equities—common and preferred stocks—shall be provided for the absorption of shocks in evil times, thus guarding against the dangers of bankruptcy.

From these obvious truths the inference is to be drawn that for the continued private ownership of railways regional consolidations must be brought about, needed new capital must be attracted to them on the expectation of a fair return, and the financing of their needs must be effected in large part through the sale of equities. It remains, then, to inquire if the past and present situation is such as to encourage the belief in the minds of private investors that these conditions will be met in the future, so that recourse to the alternate source of capital—the Government—may be avoided.

#### *Consolidations.*

In Canada consolidations in large part already have been brought about, so that the earnings of the more prosperous portions of the two

principal systems are of aid in the support of lines serving the leaner territories.

In the United States, however, little or no progress has been made in this regard since the passage of the Transportation Act of 1920 that provided (a) for the recapture of the surplus earnings of the stronger roads for the benefit of the weak ones, and (b) for the consolidation of the railways of the country into regional systems. Attempts in the former direction have failed completely, and in the latter direction they have been attended by such non-success, or reprehensible practices disclosed of late in the public press, that there is little to be hoped for in this in the future under private ownership. In the meantime, there are such startling contrasts as railroads in the Pocahontas coal region of the East enjoying comparatively rich returns, while railroads of extensive mileage in the sparsely settled but agriculturally important Northwest are bankrupt, and in at least one instance, threatening to go out of business, to the dismay of its employees and the public it serves.

### *Capital needs.*

That new capital is required for the improvement and expansion of our railways goes without saying. Grade reductions, multiple tracking, straightened alignment, modernized terminals, safety devices, changes of motive power, new extensions, more attractive and more efficient equipment, and a host of other things call for vast expenditures, especially that competitive means of transportation may be met on their own ground. Without new money railways indeed would be a dying industry. If not obtainable from the private investor, recourse must be had to the public purse.

### *Prospects of a fair return.*

Looking backward, it is evident that railway net operating income on the average has been steadily decreasing since 1916. Freight and passenger rates, in response to public demands—from the businessman, manufacturer, farmer, traveler, and in fact everyone using the railway—not only have fallen in the past, but they show every prospect of so continuing in the future. Moreover, the railways themselves, in certain instances, in their effort to meet motor truck competition, are joining with their rival in the adoption of a joint service in which they are fixing their rates on a cost basis instead of the higher ad valorem basis that has been in vogue since earliest days. Conversely, the railway costs of doing business have risen. Salaries and wages, directly and indirectly, have gone up and are ever mounting as a result of negotiations or legis-



lative enactments. Prices of materials are increasing more than is normal because the poor credit of the railways makes them "poor shoppers." Taxes, as we all know, become more and more burdensome. Public convenience and necessity dictate the inauguration or retention of services which do not pay their way, as they do the building and operation of new stations and other facilities yielding an inadequate income or, in fact, adding to the costs of operation. Then the expenditure of money on a large scale for grade-crossing eliminations and other measures for safety brings little or no monetary reward.

Between these two tendencies—falling revenues and rising costs—the net income available for a return on the investment has melted away, as evidenced in the United States by its decrease of some 50 per cent since 1916 despite the pouring of new capital into the industry to the extent of eight billion dollars.

Those who view the prospects of government ownership with grave alarm would meet this situation by government subsidies and appropriations to off-set losses for which the railways in all fairness should not be held responsible. Again, they argue that lowered rates and improved service will win to the railways a larger volume of traffic than heretofore. To the realist, there is not much to be hoped for in the way of public subsidies and appropriations, nor a substantial growth of freight traffic in the face of vigorous competition on land, water, and in the air and the substitution of gas, oil, and electricity for coal.

Under these circumstances, the prospects of a fair return on the existing and enlarged investment in railways as a whole are exceedingly slim, unless the unthinkable course proposed by some should be adopted, namely, the unjust extinguishment of a large share of existing indebtedness so that new money would flow in to replace the old money thus to be lost to educational institutions, insurance companies, savings banks, and the proverbial widow and orphan.

### *Sound financing.*

The prospect of a fair return on new money on a comprehensive scale being practically nil, and in fact the present and past rate having been so discouraging, it is manifestly out of the question to finance the future capital needs of the railways as a whole through issues of stock. A few strong companies could do this, but by and large the needs of the privately owned railways under existing conditions may only be met through increased indebtedness with its sure aftermath of failure such as we now see in the United States with more than a quarter of its mileage in the courts and its railway bankruptcies in 1935 increased 83 per

cent since 1933 in contrast with a *decrease* of 39 per cent in other fields of industry.

### *Conclusion.*

With no prospect of the regional consolidation of the strong and weak roads in the United States under private ownership, with no promise of a fair return on the new railway capital that will be required in the public interest, and with the inability of the privately owned railways to finance their capital needs on a sound basis through the sale of equities, the conclusion would seem to be unavoidable, so far as the future may be read in the light of the past and present, that recourse must be had to government ownership, under which the railways in each country may be welded into a national system serving all regions according to their needs and in readiness at all times as a potent instrument for national defense. In this it is not so much that government ownership is preferable *per se*, but that in the long run it is unescapable under circumstances that repel the private investor from putting new money into an enterprise where he has no voice in respect of the elements which so vitally affect the return to which he is entitled.

Logic points to the ultimate assumption by businessmen, bankers, manufacturers, and farmers—in a word the public-at-large—of the burden now carried in their behalf by the private investor who is no longer attracted to a service in which he is denied kind words and a fair reward, and in which his trust in the guardians of his funds too often has been abused.

Public *ownership* of railways, nationally consolidated, thus being deemed to be unescapable in the long run, it is not to be assumed that public *operation* necessarily is to follow. The device known as the “public authority,” when properly constituted, has been found by experience to be admirably adapted to the efficient and honest direction of public enterprise; and coöperative railway management, too, offers promise of the attainment of the same end with justice to investors, employees, shippers, the localities served, and the country at large. There is even the possibility that private operation of the publicly owned property might be resorted to under suitable safeguards in the interest of all concerned.

The precise way in which to meet the situation, whether by one of these methods or some other, obviously calls for dispassionate consideration now. Otherwise, the continued pursuit of our present policy of *laissez faire* will sooner or later bring us face to face with a crisis for which we will be totally unprepared.

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